

UNITED STATES PATENT OFFICE.

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PAVING BLOCK AND PROCESS OF MAKING THE SAME.

1,405,302.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, JAMES S. DOWNARD, a citizen of the United States, and a resident of Ardmore, in the county of Carter and State of Oklahoma, have invented certain new and useful Improvements in Paving Blocks and Processes of Making the Same, of which the following is a specification.

My invention relates to paving blocks and the process of making the same, and particularly to a block used as a wearing surface upon a suitable base or as a pavement without a base other than the block or sheet itself which is manufactured from natural asphalt rock or combinations of other mineral aggregates in combination with asphalt rock.

It has been hitherto proposed to form asphalt paving blocks from a mixture of particles of stone compounded with sand and mixed with asphaltum after heating, the asphaltum cementing the particles together and coating them, which process is carried on under high pressure. This process is defective in that, while 10% to 11% is the efficient percentage of bitumen in a paving mixture, it produces a mixture which rarely exceeds 5% for the reason that if it is rich in bitumen, the blocks lose their original form when subjected to the heat of the sun's rays, and cannot be stored because they crack, break down or lose form. Manufacturers have endeavored to avoid these difficulties by reducing the amount of cementing asphalt and by making the blocks under great pressure, but it is obvious that the resulting material is too brittle because of deficient bitumen.

It is a purpose of my invention to overcome those difficulties and to produce blocks which can be stored, shipped and used without losing their form or integrity under ordinary climatic conditions by providing a process of forming blocks which permits the use of 10% or more of bitumen in each block.

It is also a purpose of my invention to provide a process of making blocks which allows blocks to be manufactured under ordinary pressure by simply molding the material and to contain any percentage of asphalt desired.

In carrying out my invention, natural rock asphalt as mined is broken into pieces of predetermined sizes depending upon the thickness of the ultimate block and the par-

ticular use to which it is to be adapted. These particles of asphalt are carefully selected so that they will fit closely together and thus reduce the voids in the mineral aggregate to the least possible amount.

A mastic is now prepared by enriching rock asphalt powder with pure bitumen (asphalt) until it is plastic or mastic. The pure bitumen must be of a high melting point so that the temper of the mastic is not affected by exposure to the sun when the surrounding air shows a temperature of 115° Fahrenheit. To secure such a mixture there is added to the mastic any asphalt or asphaltite that will raise the melting point such as gilsonite, imponsite, grahamite, mineral rubber, or blown asphalt.

Sufficient mastic is now added to fill the voids between the particles of natural asphalt rock as assembled, the entire mass being thoroughly mixed in a suitable mixture and finally delivered to the moulds where it is moulded into blocks of the desired size. The finished blocks are subsequently cooled with water, after which they are stacked in storage for future use.

The resulting block or sheet, depending upon the particular use of the material, is substantially a natural rock asphalt pavement composed of particles of natural asphalt arranged to reduce the voids and joined together with a mastic to form a homogeneous mass which provides for expansion and contraction, eliminates the possibility of cracks, and insures the block retaining its original form under ordinary climatic conditions. It is necessary that the natural rock asphalt constitute a major portion of each block or sheet, in other words, each block or sheet must contain 51% or more of the rock asphalt so that it essentially consists of asphalt in its natural state.

Although I have herein described only one process of making paving blocks, it is to be understood that various changes may be made in the various ingredients and steps in the process without departing from the spirit of the invention and the spirit and scope of the appended claims.

Having thus described my invention, I claim:

1. A process of making paving blocks which consists in disintegrating natural asphalt rock into fragments, arranging the

particles to reduce the voids to the least possible amount, mixing the same with a mastic, and finally molding the mass into blocks.

2. A process of making paving blocks
5 which consists in arranging the fragments of natural asphalt rock so as to reduce the voids to the least possible number, and then filling the voids with a mastic consisting of rock asphalt powder and pure asphalt.
- 10 3. A process of making paving blocks which consists in mixing particles of natural asphalt rock with a mastic consisting of rock asphalt powder, pure asphalt, and a sub-

stance having a high melting point, introducing the mixture into a mold to form 15 blocks and subsequently cooling the blocks.

4. A paving block comprising particles of natural asphalt rock arranged to reduce the number of voids therebetween to a minimum, and a mastic comprising rock asphalt, pure 20 asphalt, and a highly tempered asphalt.

5. A paving block or sheet comprising fragments of natural rock asphalt, and a binder, the rock asphalt constituting not less than 51% of the mass.

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