

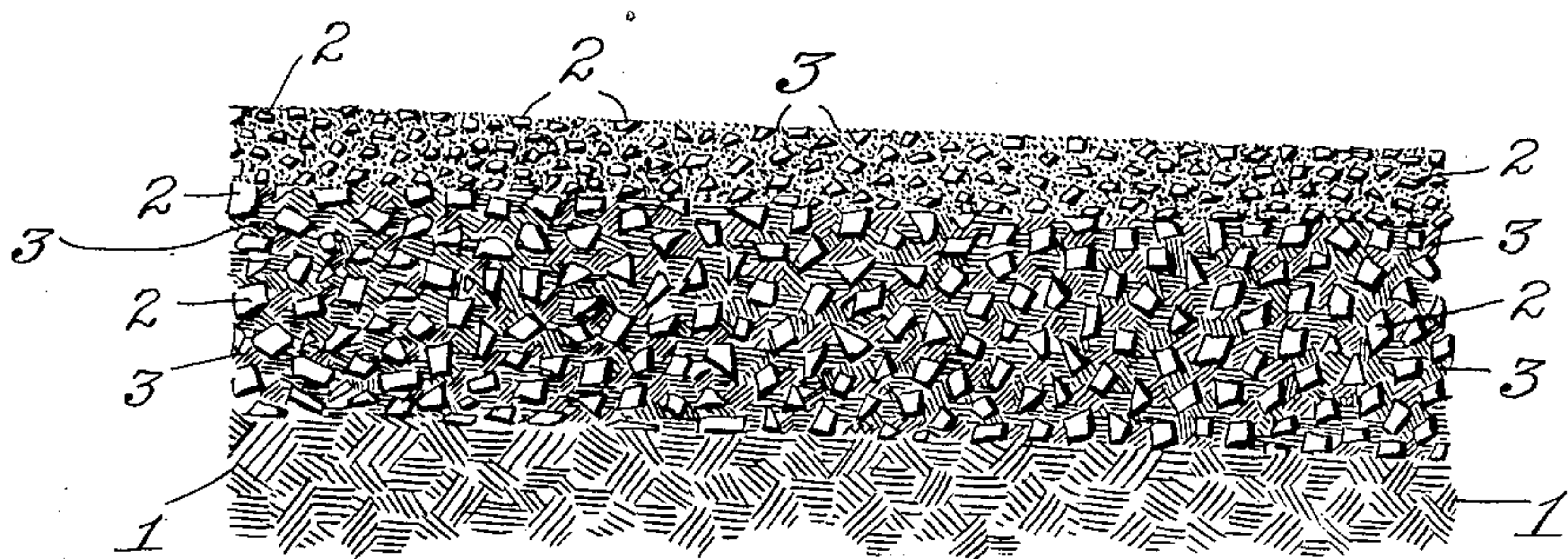
No. 814,797.

PATENTED MAR. 13, 1906.

J. I. McDONALD.

PAVEMENT.

APPLICATION FILED JAN. 30, 1905.



Witnesses.

Edwin L. Jewell

Richard H. Tucker.

John I. McDonald

Inventor

By

Geo. A. Whitsey

Attorney

UNITED STATES PATENT OFFICE.

JOHN I. McDONALD, OF ST. JOSEPH, MISSOURI.

PAVEMENT.

No. 814,797.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN I. McDONALD, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented new and useful Improvements in Pavements, of which the following is a specification.

My invention relates to paving, its object being to enable the construction in a relatively cheap and simple manner of a broken-stone or macadam roadway of high efficiency and great durability. It is well known by engineers that the efficiency of such roadway depends very largely upon the character of the filler employed to close the voids between the fragments of stone, the effectiveness of such filler or binder in maintaining the compactness and solidity of the roadway varying with the cementitious or holding properties of the material used. Clay, sand, or stone-screenings are ordinarily employed for this purpose, but are subject to the defects that they are dissolved to greater or less extent by water, are easily eroded by heavy rains, and, on the other hand, lose what little binding power they possess in periods of continued drouth, allowing the roadway to "ravel" or become loose and rough, and if the same is built upon a considerable grade to subject the paving to serious damage by ensuing rains. In addition, roadways so constructed are exceedingly dusty in dry weather and muddy in wet and are difficult to clean under all conditions without detriment to the surface. I am aware that effort has been made to meet these difficulties by the use of coal-tar and similar substances and in late years of various compositions in which refined asphalt is the important ingredient. All such compositions have to be heated to the fluid state and poured upon the stone fragments already spread *in situ* or first mixed therewith by mechanical means. This process manifestly demands a plant for the preparation of the composition, expertness in the procedure, and much expense in material employed.

My invention contemplates the use of a natural bituminous stone in a ground state for such binder. The stone, which is found either as sandstone or limestone in many

States and Territories, is simply ground to a sufficient fineness to allow it to readily sift into the voids and is then spread in proper proportion upon the layer of stone or gravel *in situ* and the whole rolled, as usual in laying macadam. The presence of the bitumen or asphalt not only gives such natural filler enormously-increased holding power upon the fragments, but under rolling and subsequent traffic the filler becomes as hard and compact as the stone, making a roadway free from dust, waterproof, easily cleaned and washed, and highly durable. Its durability is further enhanced by the fact that under the heat of the sun in warm weather the binder softens sufficient to permit the fragments of stone to reseat themselves under the traffic, and thus maintain the smoothness and integrity of the roadway.

In practice it is not essential that the whole body of the pavement be laid as above described. The lower stratum acting as a base may be constructed with the use of any convenient filler and the wearing-surface preferably three or four inches deep, as above. It is advisable also in laying the wearing-surface to put it down in relatively thin successive layers, so that the natural-stone filler may have every opportunity to thoroughly fill the voids to repletion before the final rolling.

The accompanying drawing represents a vertical section of a piece of pavement embodying my invention.

On a concrete base 1 is built up the mixture of broken stone 2 and bituminous filler 3, as above set forth, the upper layers being preferably composed of smaller fragments of stone than the lower ones.

What I claim is—

1. A pavement composed of hard broken stone and a binder of ground natural bituminous stone mixed and rolled without heating.

2. A pavement having its upper portion composed of hard broken stone mixed with a binder of finely-ground natural bituminous stone.

3. A pavement having a foundation of macadam, and a top portion of hard broken stone, the voids being filled with a binder of ground natural bituminous stone.

4. The process of making a pavement which
consists in grinding natural bituminous stone,
mixing it with hard broken stone to consti-
tute a binder therefor, spreading the mixture
5 on a suitable foundation, and subjecting the
whole to heavy pressure.
In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

JOHN I. McDONALD.

Witnesses:

JOHN S. EDWARDS,
G. A. TRENHOLM.