

No. 829,293.

PATENTED AUG. 21, 1906.

P. C. REILLY.
PAVEMENT.

APPLICATION FILED MAR. 30, 1904.

Fig 1.

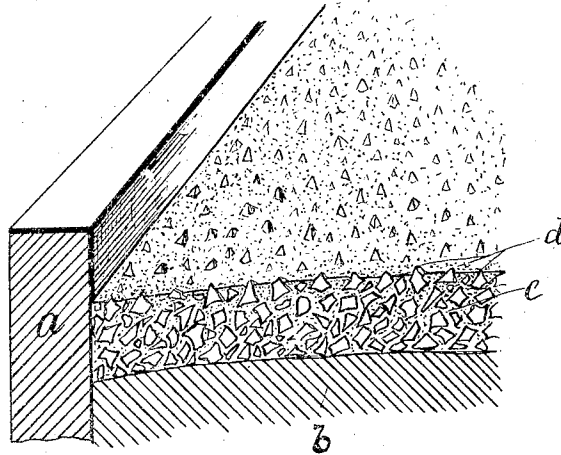
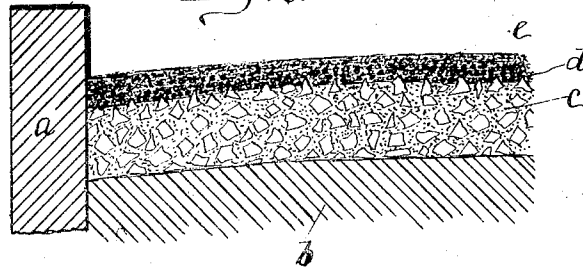


Fig 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

PETER C. REILLY, OF INDIANAPOLIS, INDIANA.

PAVEMENT.

No. 828,292.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PETER C. REILLY, a citizen of the United States, residing at Indianapolis, Marion county, Indiana, have invented a certain new and useful Improvement in Pavements; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to substructures or foundations for bituminous pavements, and particularly to bituminous concrete pavements for roadways.

The object of the invention is the provision of a structure which shall be to all intents and purposes monolithic, in which the wearing-surface shall be held in a close and permanent bond with the substructure and the result a pavement which is quickly and economically laid, ready for immediate use, and one subject in a minimum degree to the necessity for repairs and renewals. In pavements of this general type hitherto known it has been usual to first prepare a foundation of concrete or broken stone. In the latter case the stone is rolled smooth and is then coated with a bituminous cement and the wearing-surface added, dependence being placed upon the adhesive properties of the cement to bind the wearing-surface to the foundation and to hold it in place. Where concrete is used as a foundation, a bituminous cement is sometimes spread over it, as in the case of broken-stone foundations above described; but in recent years a so-called "binder course" is usually interposed between the concrete and the wearing-surface, its function being to form a bond between the foundation and the wearing-surface. Where either of these methods is followed, the bituminous material employed is susceptible to heat and when warm loses its adhesive quality, and the wearing-surface containing a percentage of bituminous material slides or moves under the weight and pressure incident to traffic. It is not absolutely fixed and held in position, but "waves" or "creeps." More than one hundred million dollars of bituminous pavements (which includes the ordinary sheet-asphalt) have been laid in the United States, and this tendency to creep and wave has never been overcome by any method heretofore used. These objections are overcome by my invention herein set out, and a pavement of a fixed and stable

character is attained by so constructing the foundation as to insure a perfect bond between it and the wearing-surface of any bituminous pavement—a bond which is permanent and not affected by extremes of temperature or conditions of use.

The invention consists in forming the concrete foundation with a rough surface of projecting stone and depressions, into which the wearing-surface becomes anchored and by which it is thereby immovably held.

In order that the invention may be fully understood, the features peculiar to the improved pavement are hereinafter more fully described and claimed, and clearly illustrated in the accompanying drawings, in which—

Figure 1 is a view in perspective of a piece of the prepared foundation, and Fig. 2 is a cross-section of a completed pavement embodying the invention.

In the drawings, *a* is the curb; *b*, the subfoundation; *c*, the concrete foundation, and *d* the projecting jagged edges and corners of the stones forming the concrete, while *e* represents the wearing-surface.

The improved pavement is prepared as follows: On top of a subfoundation, after being thoroughly compacted, the cement concrete foundation is placed, preferably about six inches thick. The stone for this concrete should, preferably, be such as will pass through a three-and-one-half-inch ring and not through a two-inch ring. The concrete is made, preferably, of one part Portland cement, two parts sand, and six parts broken stone. This results in a dense mortar mixture. The concrete is so applied to the subfoundation in such manner that after being properly tamped it comprises a compact homogeneous integral stratum, showing a rough upper surface with one-half inch to one inch depressions between the projecting stones. This rough effect is produced by tamping only until such time as the mortar substance is partially displaced from its position in the bottom of the mass by the forcing of the stone particles downward, and rises to nearly but not quite the level of the top surfaces of the stone. The tamping is then continued, leaving the stones projecting from one-half to one inch from a compact concrete mass, having no voids, and of which the projecting stones form an integral part, the word "integral" being used to convey the idea that the stones projecting from the body of the concrete form a component part

thereof as the same was prepared, as distinguished from stones inserted after the concrete is mixed. After allowing the foundation to set properly it is swept thoroughly and all loose stones removed, whereupon the surface is coated with any good quality bituminous cement, (preferably National Brand No. 1,) and the wearing-surface of any preferred composition is then applied directly thereto. The result is a pavement monolithic in character possessing integrity in a very high degree and absolutely permanent as to position. The waving or creeping so noticeable in ordinary sheet-asphalt and other bituminous pavements, for instance, is absolutely precluded.

By this invention relative movement between the concrete foundation and the wearing-surface is prevented, and the resultant unpleasantly familiar depressions and humps in bituminous pavements are avoided. The stones projecting from the concrete become a part of the wearing-surface and give additional stability thereto, besides holding it immovably in its original position. The life of the wearing-surface is prolonged, moreover, by reason of being held in its original position and thus maintained of a uniform density instead of being kneaded into alternate elevations and depressions by the drawing pressure of the traffic.

I am aware that it has been heretofore proposed to form pavements by constructing a foundation layer of stone coated with tar, asphalt, and the like, then a layer of coarse stone strewn or placed by hand and rolled in, upon which the wearing-surface is then applied; also, that upon a layer of a plastic mass of tar, pitch, asphalt, and the like in a mold it has been proposed to superpose a layer of broken stone and partially embed the same, such molded blocks to be later laid upon a foundation. The professed object in such cases has been to constitute of the inserted stone pieces a key to bind the upper and lower layers. Such pavements and methods of production differ radically from my invention, in that the layer of stone does not form an integral part of a homogeneous structure, as in my pavement, but is applied subsequently and lacks the great stability and relative immobility of the parts which characterizes a pavement constructed according to my invention.

Having thus fully disclosed my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A pavement comprising a concrete structure having a rough surface composed of projecting stones forming an integral part of the structure with intervening depressions.

2. A paving-foundation comprising an integral structure having a rough surface com-

posed of projecting stones and intervening depressions.

3. A concrete foundation having a rough surface caused by the projecting edges of stones forming an integral part of the structure.

4. A foundation comprising a concrete structure, a portion of the component stones of which form an integral part thereof and project above the surface thereof.

5. A foundation comprising an integral concrete structure formed preferably of one part cement, two parts sand and six parts broken stone, the component parts of the mass thoroughly intermingled, the edges of a portion of the stone projecting above the body of the material and constituting an uneven surface therefor.

6. A pavement comprised of a concrete foundation having a rough upper surface, forming an integral part thereof and a wearing-surface applied above and in engagement with said rough surface.

7. A pavement comprising a concrete foundation, a portion of the integral component stones of which project above the surface thereof, and a wearing-surface applied above and in engagement with said roughened surface.

8. The process of producing a paving-foundation, which consists in placing in position a layer of concrete, and compacting the same until the more liquid portions are partially displaced from the lower part of the mass and the stones forming the upper portion project above the surface thereof, and allowing to set.

9. The method of producing a pavement, which consists in placing in position a layer of concrete, tamping the same until the more liquid portions are partially displaced from the lower part of the mass which is thus made thoroughly compact and the stones forming the upper portion project above the upper surface thereof, permitting to set, coating with cement and applying thereto a suitable wearing-surface.

10. The process of producing a pavement, which consists in placing in position a layer of concrete, compacting the same until the more liquid portions are partially displaced from the lower part of the mass and the stones forming the upper portion project above the surface thereof, permitting to set, and applying thereto a bituminous wearing-surface.

In testimony whereof I affix my signature to this specification in the presence of two witnesses.

PETER C. REILLY.

Witnesses:

JAMES BRODEN,
WILLIAM F. MOORE.