

(No Model.)

C. H. BULL.
ASPHALT PAVEMENT.

No. 505,699.

Patented Sept. 26, 1893.

Fig. 1.

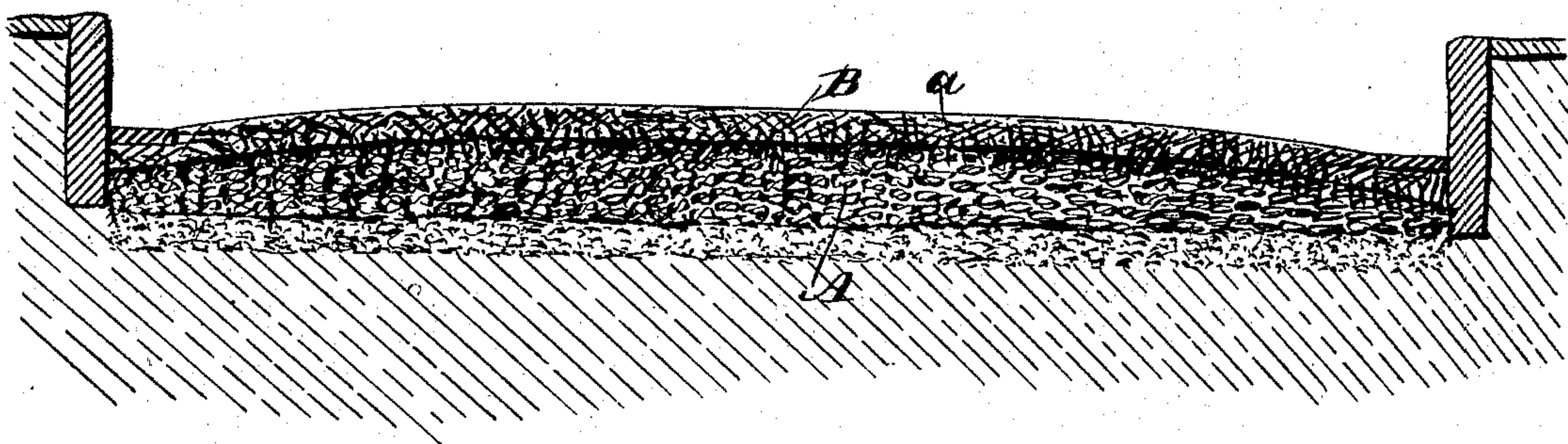
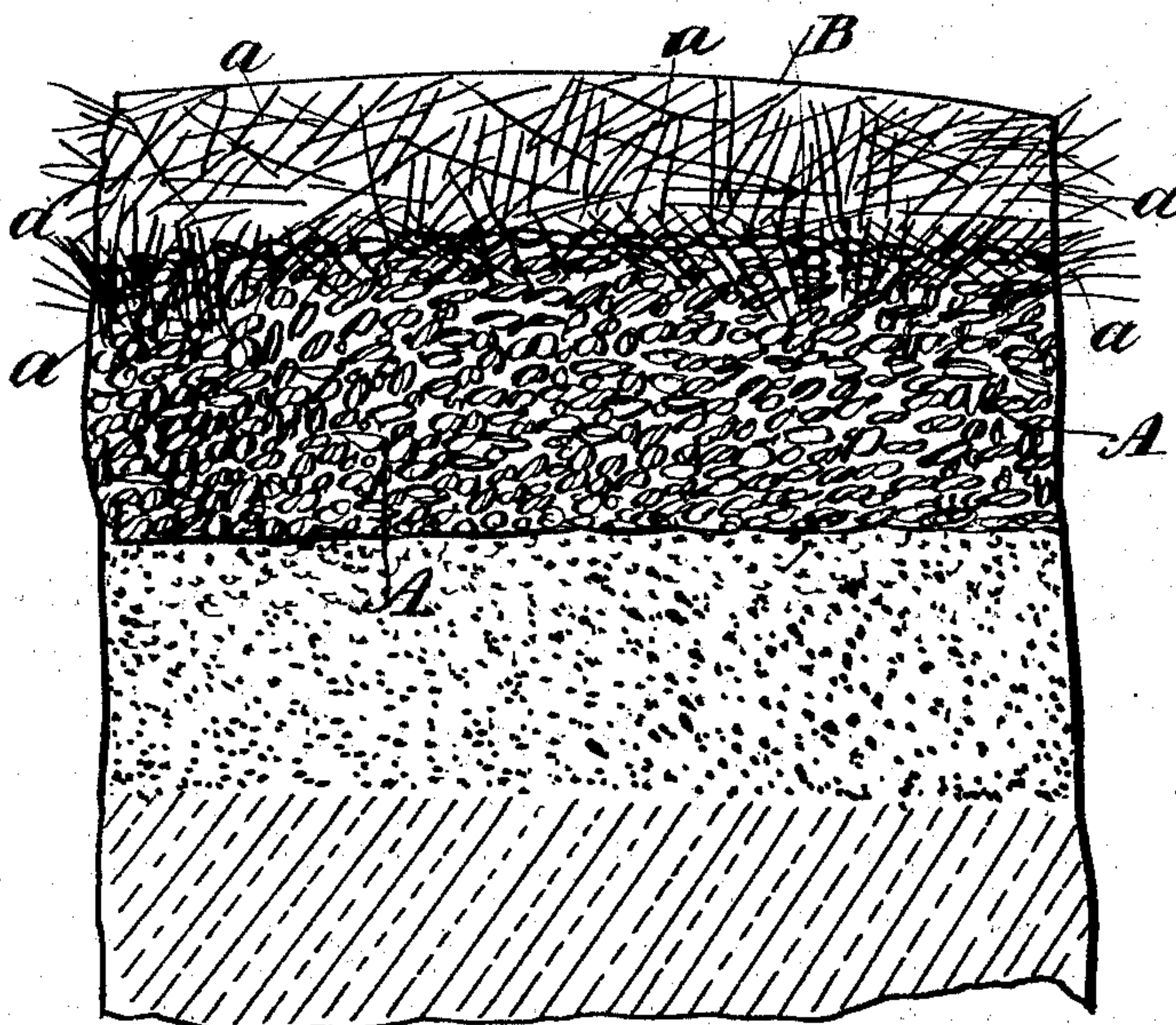


Fig. 2.



WITNESSES:

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ASPHALT PAVEMENT.

SPECIFICATION forming part of Letters Patent No. 505,699, dated September 26, 1893.

Application filed November 17, 1892. Serial No. 452,274. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES H. BULL, of New York city, in the county and State of New York, have invented a new and useful Improvement in Asphalt Pavements, of which the following is a full, clear, and exact description.

My invention relates to improvements in road-beds having a pavement or wearing surface of a composition that contains Trinidad or other asphalt.

The pavement for road beds or other similar thoroughfares, when it consists of what is technically known as asphalt, embodies different ingredients to adapt it to form a durable wearing surface for the road of which it is a part.

The asphalt pavement forming the subject matter of this specification, is composed of asphaltum, sand, and calcined limestone, or crushed limestone rock, all heated and mixed together in proper proportions, a certain quantity of heavy petroleum oil being added to give elasticity to the composition and prevent its crumbling or cracking when exposed to cold.

The quantity of oil used to a given amount of other materials for the purpose of adapting the composite pavement to withstand the rigors of winter, is found to render the pavement soft under the influence of summer heat, so that during the heated term of the year an asphalt road bed, made of the usual materials, is disposed to yield to the rolling action of vehicle wheels and become longitudinally grooved thereby, and also to creep into transverse undulations. The mentioned objectionable roughness of the wearing surface that is produced by the pressure and progressive movement of numerous vehicle wheels, is mainly due to the want of an adjustable binder throughout its mass, as it is found that the molecules of sand, or crushed stone, that are enveloped by mixed asphalt and oil, have a tendency to slide on each other when the composite material is exposed to continued summer heat, and is engaged by the wheels of moving vehicles, so that ruts are produced lengthwise of the road bed, and in some instances, the pavement is rendered undulatory, the latter defect being caused by the want of a binder between the asphalt paving material

and the concrete substratum usually provided as a base for such a road pavement.

The object of my invention is to provide for the distribution of the weight or pressure sustained at any one point on the asphalt surface, when the weight of a loaded vehicle is concentrated at that point, over as large a space of the surface of the asphalt as possible, by the employment of a pervading filamentary binder, which will tie the entire mass of asphalt sheeting together in all directions and give body to the asphalt, so that the softening influence of solar heat will be counteracted and the usual indentation of the asphalt pavement by the wheels of vehicles be in a large degree prevented.

A further object of my invention is to provide a filamentary binder that is incorporated with the concrete base whereon the asphalt sheeting is imposed and supported, which binder is adapted by its location to become attached to the lower side of the asphalt sheeting when the latter is laid, and thereby unites the wearing surface or asphalt sheeting with the concrete below it, thus binding the sheeting and base of the road bed together in all directions, so as to prevent a creeping movement of the sheeting, and a wave formation of its mass when the asphalt pavement is subjected to summer heat.

To these ends my invention consists in bonding the concrete base to the asphalt sheeting by means of a binder of separate and independent filaments incorporated therein as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a transverse sectional view of a road bed embodying the improvement; and Fig. 2 is an enlarged view in cross section of part of a road bed, composed of a concrete base and an asphalt sheeting on said base, these successive layers being bound together by improved means.

The foundation A of the road bed shown, is made of any preferred material, and if composed of broken stone, is preferably cemented throughout with a semi-liquid application of hydraulic cement, thereby producing a concrete base for the support of the as-

phalt sheeting B. As before mentioned, the sheeting B is composed mainly of granular silix, such as sharp sand, Trinidad or rock asphalt, or crushed limestone may be substituted for the sand, and heavy petroleum oil, all mixed together in proper proportion by application of heat and stirring agitation. To the mass of composite material mentioned, while undergoing the process of admixture, there is stirred into the same a proper proportion of fibrous or filamentary material so as to cause the strands or fibers α to pervade the mass and extend in all directions through it, which will tie or bond the composite substance so that it will be adapted to resist fracture when subjected to cold.

The improved composite sheeting is distributed upon the concrete base A in an even sheet, so as to conform with the top surface of said base, and is then consolidated in the usual manner, with heavy rollers that are propelled over the asphalt composition, until it is rendered solid by applied pressure and cooling at the same time.

It will be seen that the thorough incorporation of filaments of any suitable material, such as hair, metal strands or vegetable fiber, will so bind the composition throughout its mass, that it will in a large degree resist the embedment of vehicle wheels when the asphalt pavement is in a measurably soft condition, due to its continued exposure to the rays of the sun in summer.

When it is desired to knit the asphalt sheeting B to the concrete base A, a suitable amount of the filamentary binding material is inti-

mately mixed with the plastic cement that forms the top dressing of the concrete base, any convenient means being employed to cause the filaments to project from the face of said top surface of the bed or base A.

If the provision of the filamentary projection mentioned is made, it will be evident that the deposition and consolidation of the asphalt sheeting upon the base A will cause the filaments projected from the latter to engage and interlock with the asphalt composition and bind the sheeting upon the base, so that expansion of the sheeting will not induce a wave-like formation across the asphalt pavement, such an action being prevented by the close bonding of said pavement with its supporting base.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

An asphalt pavement comprising a concrete base having a bonding of separate and independent filaments extending above its upper surface and an asphaltum sheeting having a bonding of separate and independent filaments and also bonded to the concrete by the filaments projecting upwardly therefrom, whereby the sheeting will be prevented from sliding on the base and the component parts of the sheeting will be prevented from separating by heat or travel, substantially as set forth.

CHARLES H. BULL.

Witnesses:

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