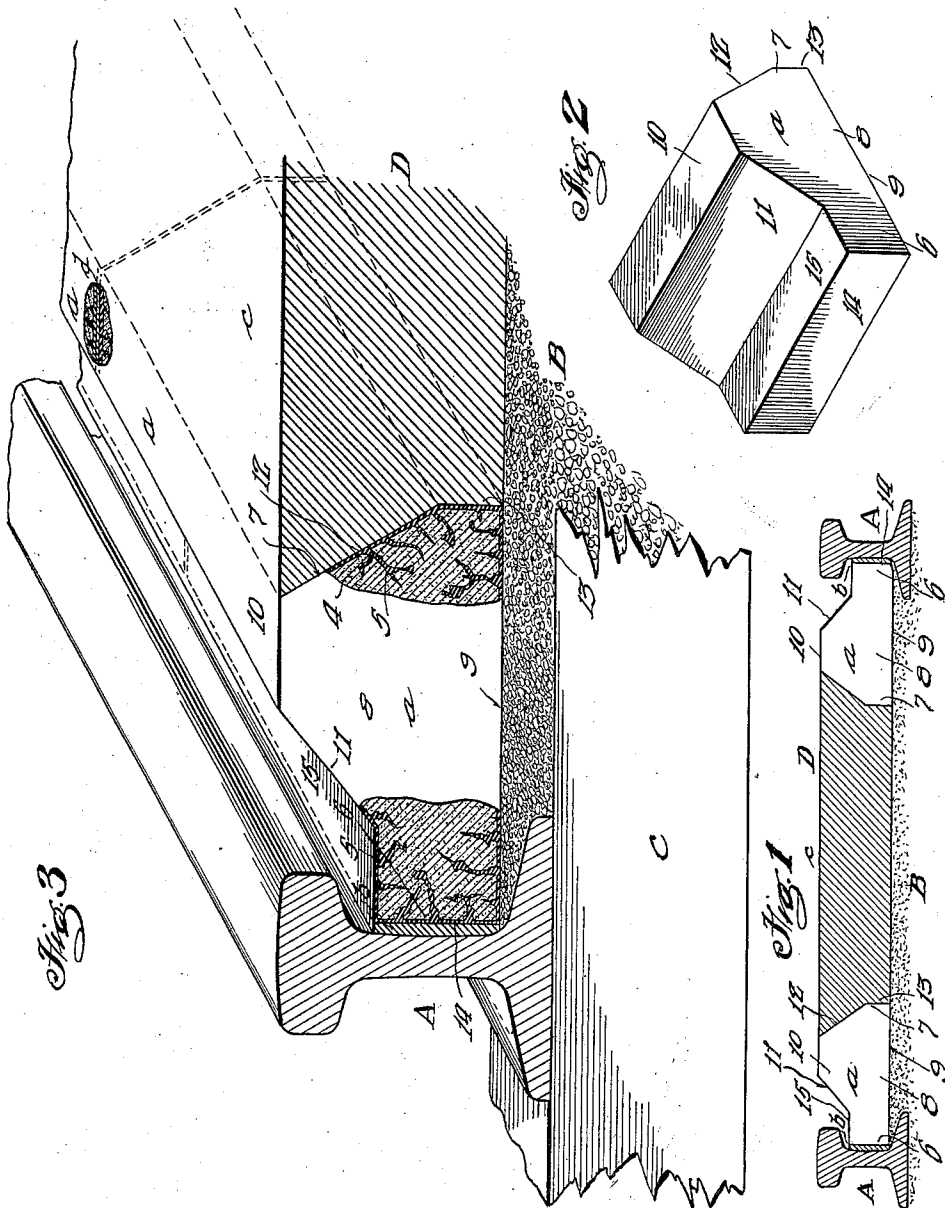


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ART OF PAVING.

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1,041,578.

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ART OF PAVING.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN A. BELL, GEORGE R. WILTON, and GEORGE P. GRIFFITH, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in the Art of Paving, of which the following is a specification.

This invention relates to improvements in the art of paving roads and streets; and it has for its object to provide more perfect paving constructions and formations with respect to durability, life, appearance, facility in installation and repair, and general serviceability and efficiency.

With the above and other objects in view, the invention consists in the novel provision, organization, formation, construction, association, inter-relation and relative arrangement of parts, elements and features, all as hereinafter described, shown in the drawing, and finally pointed out in claims.

In the drawing; Figure 1 is a transverse sectional view, partly in full lines, of a portion of a roadway in and upon which railway rails are installed, the portion of the roadway between the rails being organized to embody the improvements in paving constituting the invention; Fig. 2 is an enlarged isometric view of a paving element essentially concerned in the improvements constituting the invention, the same being shown separate from the remaining features with which the same is shown associated in Fig. 1; and Fig. 3 is an enlarged isometric fragmentary view, more fully developed, of the construction and organization of parts and features shown in Fig. 1; the disclosure in this figure being partly in full lines and partly broken away for clearness of illustration.

Corresponding parts and features in all the figures are denoted by the same reference characters.

Referring with particularity to the drawing, A, A designate railway rails installed in and upon a road-bed B in connection and association with ties C, one of which is shown in the drawing.

D designates by general reference a paving extending between the rails A and organized in accordance with the invention. The paving D comprises specifically, spaced rail paving blocks *a*, *a*, a filler *b* between each of the rail paving blocks *a*

and the adjacent rail A, a paving body *c* extending transversely of the road-bed B, between the paving blocks *a* and superposed upon the road-bed B, and a filler *d* corresponding to the filler *b* and disposed between and uniting adjacent paving blocks *a* at each side of the road-bed; there being two lateral series of paving blocks *a* extending respectively adjacent to the rails A; the paving body *c* being of continuous formation intermediate of the lateral series of said paving blocks. As hereinafter specifically disclosed, the organization of the paving D, inclusive of the paving blocks *a* and the paving body *c* and the fillers *b* and *d* is of such constituent nature as to provide a homogeneous inter-relation and cohesion of all the elements and parts thereof.

Each of the rail paving blocks *a* consists of a porous body 4, composed of baked clay the consistency of which is substantially that of a soft light red or salmon brick. The porous body 4 is impregnated with a filler 5, corresponding in nature with the fillers *b* and *d*, which is homogeneously diffused throughout said body 4 to the full extent of receptivity of the porous structure of the latter. Portions of the globular mass of the filler 5 are shown in Fig. 3; but it is to be understood that the distribution of such filler throughout the mass of the porous body is uniform and even to the extent of complete occupation of the interstices present in said porous structure. The paving block *a*, having the inherent characteristics above set forth, comprises, in its aspects of conformation resultant upon the distribution of the portions of its mass, two lateral body portions, 6 and 7 respectively, and an intermediate body portion 8, the entirety being of integral formation, as above described. The lateral body portions 6 and 7 are formed respectively for association with the rail A and the paving body *c*. The base portion 9 of the paving block is of plane formation, and the top portion 10 of said block, or of the intermediate body portion 8 thereof, extends in parallel relation thereto, being likewise of plane formation. The vertical dimension of the intermediate body portion 8 is such that when the paving block is installed in and upon the road-bed B, the top portion 10 of the former will lie substantially in the horizontal plane of the crown of the rail A.

The lateral body portion 6 is of diminished vertical dimension, with relation to the corresponding dimension of the intermediate body portion 8, whereby said body portion 5 may project between the crown and the bottom flange of the rail and be accommodated in the space between the same closely adjacent to the vertical web of the rail. Said lateral body portion 6 is preferably rectangular in cross-sectional formation, the upper surface portion thereof being connected with the top portion 10 of the intermediate body portion 8 by an inclined surface portion 11. The lateral body portion 7 has an inclined upper surface portion 12, and a vertical side facial portion 13, which latter is of less vertical dimension than the vertical side facial portion 14 of the lateral body portion 6. In contradistinction to the inclined upper surface portion 12 of the lateral body portion 7, the upper surface portion 15 of the lateral body portion 6 is horizontal or extends in a plane parallel with the plane of the top portion 10 of the block *a*.

The paving body *c* is massed in between the paving blocks *a* so that the upper or wearing surface of both of the same conform to the same plane, constituting a continuous and unbroken surface portion; and the portion of the paving body *c* in contact with the inclined upper surface portion 12 of the lateral body portion 7 of the paving block *a* is complementary thereto in conformation, establishing an inter-locking relation between the paving body *c* and the paving block *a*, opposing disruption of the paving D by dislocation of the paving block.

The filler *d* is massed firmly between adjacent paving blocks *a*, as illustrated in Fig. 3; and the filler *b* is massed between each paving block and the web of the adjacent rail, extending between said web and the lateral body portion 6 of the paving block. The paving so comprising the blocks *a*, the fillers *b* and *d*, and the paving body *c*, constitutes a continuous and unbroken unit filling the space between the rails A; all of the parts and elements of the paving being homogeneously united, as follows from the specific preferred nature of the composition of matter common to all of the three fillers, that is the joint fillers *b* and *d* and the body filler 5, and the paving body *c*.

The essential constituent substance of each of the joint fillers *b* and *d*, the body filler 5, and the paving body *c*, is preferably asphaltum. The joint fillers *b* and *d* and the paving body *c* are preferably composed of an asphaltum mixture of predetermined fineness. The body filler 5 preferably consists of asphaltum having less than two per cent. carbenes, as determined by the test known in the art as the cold carbon tetrachlorid test. We have determined that in

order to properly penetrate the body 4 of the paving block *a*, with asphaltum, there must not be present in the asphaltum as much as two per cent. carbenes; and that if a greater percentage of carbenes is present in the asphaltum the latter will not be of proper fineness or purity to produce such constitution of the paving block as shall insure the highest efficiency thereof, both in service and in the homogeneous uniting of the paving block or blocks with the paving body *c* and the fillers *b* and *d*. In other words, proper coalescing or fusion of the paving body and the fillers *b* and *d*, and also the filler 5, does not result if a higher percentage of carbenes is present in the asphaltum constituting the filler 5. If a higher percentage of carbenes is present, the wearing surface of the paving block will be inferior, as the carbenes penetrate to a lesser degree the paving block body 4 than do the purer portions of the asphaltum. Therefore, if a higher percentage of carbenes is present the exterior portions of the paving block are inferior with respect to durability and service efficiency, being more brittle, frangible and friable, and possessing a lesser tendency to "heal" consequent upon indentation or other disruption. The melting point of the body filler 5 is predetermined not to exceed 170 degrees Fah.; whereas the degree of heat present in the asphaltum mixture constituting the joint fillers *b* and *d*, and the paving body *c*, at the time of application of the same, is from 250 to 300 degrees Fah. When the paving body *c* and the joint fillers *b* and *d* are applied to the paving blocks *a*, in plastic condition and at the temperature above recited, organizing the paving D, the heat of the asphaltum mixture of the elements *b*, *d*, *c* is in part transmitted to the body filler 5 the temperature of which is elevated to a degree exceeding the melting point of said body filler, and the same is reduced to a liquid or plastic condition, with the result that the molten body filler 5 and the joint fillers *b* and *d* and the paving body *c* cohesively unite, producing a homogeneous unitary mass including the filled paving blocks *a* and the paving body *c*, together with the joint fillers *b* and *d*. It is manifest that the homogeneous formation of the completed unitary paving D may be broken up to permit detachment of the paving blocks *a*, for repair, by application of heat sufficient to fuse or melt the cohering joint fillers *b* and *d* and the body filler 5 and the paving body *c*.

The advantages predicated upon the use in service of the improvements in paving constituting the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawing and the following statement:—

The rail paving blocks *a*, organized as de-

scribed, are of greatly increased durability with respect to paving blocks formed according to standard practices. When the vitrified paving block or brick is employed, the brittleness of the same renders it fragile to an objectionable extent, resulting in frequent fracture and dismemberment of the structure. The porous body 4 impregnated with the asphaltum filler 5 is capable of withstanding extreme stresses of compression or impact without breakage, adapting it particularly for insertion adjacent to railway rails, which proximity of location requires the provision of an open space for the wheel flanges as indicated in the drawing above the lateral body portions 6 of the paving blocks *a*. Indentations or other invasions of the paving block structure are to an extent self-healing under further compression or impact, the asphaltum filler 5 effectively knitting together the disrupted porous fabric.

The conformation of the lateral body portion 7 of each paving block, together with its homogeneous joining with the adjacent portion of the paving body *c*, provides and forms a locking inter-relation between these elements, making for unity and structural durability of the entirety. These results are supplementarily effected by the homogeneous knitting of the joint fillers *b* and *d* and the filled paving blocks *a* with the paving body *c*.

A further advantage flowing from the employment of the paving block *a* impregnated as described, consists in substantial freedom from the presence of objectionable dust due to the service attacks of vehicle wheels and other objects.

The entire paving *D* is highly durable and of long life, and has an inherent tendency

to preserve a proper surface conformation and condition.

We do not desire to be understood as limiting ourselves to the specific provision, composition, construction, formation, association, and combination of parts, elements and features shown and described as embodied and utilized in the practice of the invention; but reserve the right to vary the same, in adapting the invention to varying conditions of use, without departing from the spirit of the invention and the terms of the following claims.

Having thus described our invention, we claim and desire to secure by Letters Patent:—

1. In a pavement, a porous block impregnated with a filler having a relatively low melting point, and a plastic body adapted to coalesce with the filler and applied at a higher temperature than the melting point of the filler, whereby the plastic body and porous block are bonded together.

2. A porous block impregnated with a filler having a relatively low melting point, and a plastic body applied at a higher temperature than the melting point of the filler, whereby the plastic body and porous block are bonded together, both the filler and the plastic body having asphalt as the essential constituent thereof.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

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Witnesses:

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