

UNITED STATES PATENT OFFICE.

WILLIAM T. HEADLEY, OF PHILADELPHIA, PENNSYLVANIA.

PAVING MATERIAL.

No Drawing.

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To all whom it may concern:

Be it known that I, WILLIAM T. HEADLEY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Paving Material, of which the following is a specification.

The object of the present invention is three-fold: First, to provide a bituminous binder of such nature and fluidity that it can be successfully combined with a suitable mineral aggregate, either wet or dry, such as crushed or broken stone, gravel or sand, without heating any of the materials; the agents used in making the bitumen of proper fluidity being of such nature that they will evaporate at appropriate times; second, to provide, without heat, a paving material consisting of a mineral aggregate, such as crushed or broken stone, gravel or sand, wet or dry, and a binder in the form of an emulsion the base of which is a bitumen fluxed with a suitable solvent, and third, to provide for coating mineral aggregates, with bitumen, without the use of heat, and for the production of a resultant mixture of such nature that it can be compounded in one place and shipped, as in cars, and thereafter successfully used, without heating, in building and repairing roads, streets, platforms and the like.

I am aware that a paving mixture can be made cold by the use of an emulsion and a suitable mineral aggregate, but such mixtures dry out and set up quickly, owing to the rapid evaporation of the water used in the emulsion, and for this reason cannot be successfully shipped any great distance and then placed on the road, also that bitumens fluxed with a suitable solvent such as gasoline or the like can be mixed with a dry mineral aggregate, but in order to obtain proper fluidity for successful manipulation, a large per centage of solvent must be used which requires a long time to evaporate. Also paving mixtures are made by the use of cold mineral aggregate, solvents and hot bitumens. My invention consists in gaining the desired fluidity for successful cold mixing, shipping and proper drying by emulsifying the bitumen and preventing a

too rapid setting by the use of a proper solvent.

Paving material of my invention can be made by mixing a cold binder, consisting of an emulsion of either asphalt or tar to which 3 to 5% of a solvent has been added, with cold crushed or broken stone and sand or other suitable materials which may be wet with cold water. By an emulsion reference is made to water and soap or the like in association with asphalt or tar in the form of an emulsion, and the asphalt or tar used may be hard. Such an emulsion if used alone can be mixed cold with cold wet or dry stone, but the water evaporates in a comparatively short time so that the mixture sets so quickly that it cannot be successfully shipped, as in cars, and thereafter used on a road or pavement.

Asphalt or tar tempered with an appropriate volatile solvent and mixed with stone provides a mixture which can be shipped without setting until it is put on the road, but the preparation or use of such material involves the use of heat in one way or another and so much solvent is required that the binder sets too slowly and in fact in some cases practically never dries properly. By combining the emulsion of asphalt or tar with a proper solvent, I avoid the disadvantages of the use of heat and obtain the advantage of such delayed setting as permits of making the material in one place and shipping it to another ready for use, whereupon it sets properly.

The fact that the proportion of solvent is relatively small, not only effects an economy, but also permits of its evaporation in an appropriately short time, while in co-operation with the emulsifier the setting of the binder is delayed in such manner that the paving material can be mixed in one place, shipped in bulk, and then used, without the use of heat, and will nevertheless set properly when in place upon a road, platform or the like.

The described binder can be made by subjecting soap, 2% more or less by weight, asphalt 65%, more or less by weight, an appropriate solvent, as gasoline 3 to 5% by weight, and the balance water, to heat and agitation. In cases where gas tar is used

the solvent should be for example a tar distillate.

I claim:

Paving material for use on roads, streets, platforms and the like, capable of manufacture without the application of heat and susceptible of bulk shipment without setting

and consisting of a mineral aggregate and an emulsion of bitumen and which contains a volatile solvent of bitumen which delays setting of the material while in bulk and until spread. 10

WILLIAM T. HEADLEY.