

UNITED STATES PATENT OFFICE.

JOSEPH HAY AMIES, OF GERMANTOWN, PENNSYLVANIA, ASSIGNOR TO
THE AMIES ASPHALT COMPANY, OF PHILADELPHIA, PENNSYLVANIA,
A CORPORATION OF SOUTH DAKOTA.

PROCESS OF PREPARING COMPOSITIONS FOR AND OF HEATING AND LAYING BITUMINOUS PAVEMENTS.

SPECIFICATION forming part of Letters Patent No. 760,051, dated May 17, 1904.

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To all whom it may concern:

Be it known that I, JOSEPH HAY AMIES, a citizen of the United States, residing at Germantown, Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Processes of Preparing Compositions for and of Heating and Laying Bituminous Pavements, &c., of which the following is a specification.

My invention relates to a process of preparing, heating, and laying bituminous paving compositions. The process may be applied to other utilities, such as roofing, flooring, and the like.

Still another object of my invention is to secure a method of laying sheet-asphalt pavements that will simplify the process and reduce the cost of labor and apparatus employed to a minimum.

All the tools and appliances needed to carry out the process herein described can easily be placed on one two-horse wagon and transported from place to place.

My process is as follows: I use what is technically known as "solid asphalt." This I reduce to a granulated or powdered condition. I then place this divided asphalt in bags or other retainers ready for shipment. Should it be necessary to prevent the powdered asphalt from forming into lumps, I may mix therewith fine sawdust or carbonate of lime or talc and the like. If, however, the said asphalt is granulated or powdered in close proximity to the point of use, it may be carried unconfined to the place of consumption, or in that case it may be retained in bins until needed. I next lay down upon a mixing-board or place into a mixing-machine suitable for the purpose a due quantity of cold fine sharp sand or other mineral matters, and I then dampen the said mineral matters with a due quantity of crude petroleum-oil, adding thereto, if desirable, enriching flux. I may add to the said crude petroleum-oil a very small quantity of crude naphtha or gasolene needful for my purpose, as will be hereinafter explained. I now mix with the already-dam-

pened mineral matters a due quantity of my granulated or powdered asphalt and immediately lay this mastic upon the prepared road or street bed. I do this to prevent as far as possible any loss of the volatile oils by natural evaporation. If, however, I cannot immediately use this prepared mastic I carefully cover it to prevent as far as possible the loss of the said volatile oils. When I come to place it on the street or road bed, &c., I spread it out loosely, employing very hot rakes for that purpose. I then sprinkle it with a small quantity of crude gasolene or naphtha. To do this, I use a fine sprinkling-pot. I then ignite the volatile emanations arising from the mass, and while these are burning I vigorously agitate the mastic with hot rakes to secure a proper locating and placing thereof. The small quantity of gasolene which may have been added to the said oils (to which I have before referred) is intended to insure a sufficient flame to procure the desired heat, and this can be regulated (in combination with the gasolene sprinkled thereon) to control the flame and insure perfect cementation and hardening of the pavement without damage to the asphalt by burning. I now immediately roll the warm pavement with hot rollers, and this is continued until perfect cementation and hardening have been secured.

In making "binder" I first produce a bituminous mortar by regulating the quantity of crude petroleum-oil and crude naphtha. I add to the sand and powdered asphalt and then therewith the broken stone, pebbles, &c.

It is not necessary to say that after mixing the granulated or powdered asphalt with the dampened mineral matters I may sprinkle the mastic with the gasolene and at once ignite it and agitate the mass while the ignited volatile emanations are burning, and then carry the warm mastic to the "rakers;" nor is it necessary to say that I may omit the gasolene or naphtha, and therefore the ignitable emanations, and use other appliances for producing the required heat to secure the necessary cementation and hardening of the pavement, and I may take the mastic herein described (omit-

ting the said gasolene and ignitable emanations) and partly heat it, then give it to the rakers, and then apply the hot rakes and hot rollers to secure the desired cementation and hardening of the pavement.

Having now described my invention, what I desire to secure by Letters Patent of the United States is—

1. The herein-described process of producing a composition for pavements, &c., which consists in wetting cold, sharp, fine sand, or other mineral matters with crude petroleum-oil, then adding thereto, and mixing therewith, a due quantity of granulated or powdered asphalt, substantially as described.

2. The herein-described process of producing a composition for pavements, &c., which consists in reducing solid asphalt to a granulated or powdered condition, and then while in this condition, mixing it with cold, fine, sharp sand, or other mineral matters, said sand or other mineral matters having been previously wetted with crude petroleum-oil, a due quantity of crude naphtha or gasolene having been added thereto, for the purpose as set forth and described.

3. The herein-described process of producing a composition for pavements, &c., which consists in reducing solid asphalt to a granulated or powdered condition, and then while in this condition, mixing it with cold, fine, sharp sand, or other mineral matters, said sand or other mineral matters having been previously wetted with crude petroleum-oil, a due quantity of crude naphtha or gasolene having been added thereto, then sprinkling a desired quantity of gasolene thereon, then igniting the volatile emanations arising therefrom, substantially as described.

4. The herein-described process of producing a composition for pavements, &c., which consists in reducing solid asphalt to a granulated or powdered condition, and then while in this condition, mixing it with cold, fine, sharp sand, or other mineral matters, said sand or other mineral matters having been

previously wetted with crude petroleum-oil, a due quantity of crude naphtha or gasolene having been added thereto, then sprinkling a desired quantity of gasolene thereon, then igniting the volatile emanations arising therefrom, then vigorously agitating the mastic with hot rakes while heating in the flame caused by the ignited volatile emanations, and then rolling it with hot rollers, until perfect cementation and hardening will be secured, substantially as described.

5. The herein-described process of producing "binder" for a bituminous pavement, &c., which consists in wetting sand and other mineral matters with crude petroleum-oil, to which has been added a desired quantity of crude naphtha, or gasolene, then mixing therewith a due quantity of granulated or powdered asphalt, the said mixture being regulated to form a thin bituminous mortar, then mixing therewith broken stone, pebbles and the like, then sprinkling a desired quantity of crude naphtha or gasolene thereon, then igniting the volatile emanations arising therefrom, and while the volatile emanations are burning agitating the mass until the flame is expended, then rolling it with hot rollers until perfect cementation and hardening will be insured, substantially as described.

6. The herein-described process of producing a composition for pavements, &c., which consists in wetting cold, sharp, fine sand, or other mineral matters with crude petroleum-oil, then adding thereto, and mixing therewith, a due quantity of granulated or powdered asphalt, then submitting the said composition to desired heat necessary to secure the perfect cementation and hardening of the pavement, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH HAY AMIES.

Witnesses:

JAMES P. PETIT,
FLETCHER W. STILES.