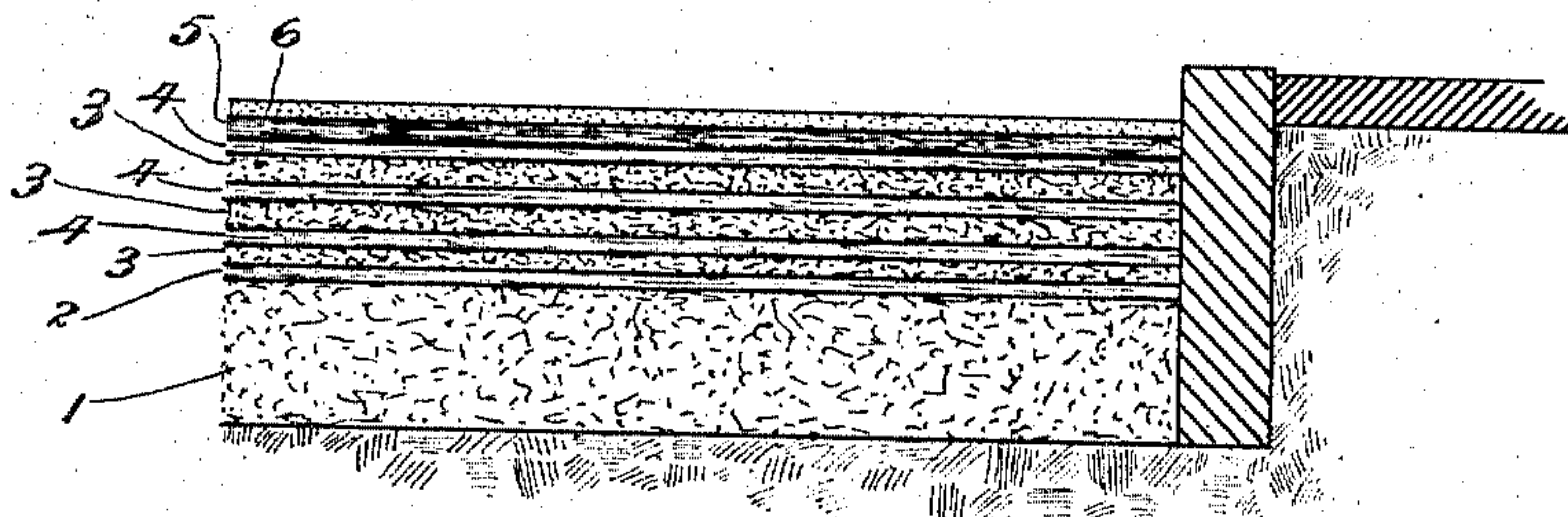


J. H. AMIES.
ROAD AND STREET CONSTRUCTION.
APPLICATION FILED DEC. 26, 1908.

966,982.

Patented Aug. 9, 1910.



WITNESSES:

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ROAD AND STREET CONSTRUCTION.

966,982.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed December 26, 1908. Serial No. 469,464.

To all whom it may concern:

Be it known that I, JOSEPH HAY AMIES, 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 Road and Street Construction, of which the following is a specification.

This invention relates to the construction of roads, streets, side-walks, cellar bottoms, driveways, paths and the like, and the principal object is to treat and utilize *in situ* the natural and local materials of which the road or street beds consist.

A description of the methods employed in treating and laying the soils of which the roads or streets consist, reference being had to the accompanying drawings illustrating diagrammatically the steps of the invention, will be a sufficient explanation of the manner in which other utilities of the art are applied. In constructing roads or streets I utilize the soils of which the grade or sub-grade may consist. The sub-grade may consist of any material. In practicing my invention, about four inches of the surface of the grade is shifted by a scoop shovel or other appliance parallel with the side lines of the road or street. Then the sub-grade is plowed up to a depth of about six inches and pulverized. There is now introduced a sufficient amount of calcium oxid or calcium hydrate, that is caustic lime, in a pulverized condition. It may be found that the successive sprinkling of the pulverized sub-grade with water and calcium oxid or calcium hydrate, may be preferred in some cases to the powdered form of caustic lime. These powdered calciums, must be well mixed with the soil. Preferably a day should elapse before the process is continued to permit the powdered calcium hydroxid to have its due effect. I then add about one part of Portland cement to every twelve or fifteen parts of soil and calcium and if necessary sprinkle the mass with water and then tamp or roll the same. This mass should now stand for not less than 72 hours before the topping is placed thereon. Without the use of caustic lime the soil would have subtracted the lime element from and destroyed the Portland cement. By my process the lime that would have been subtracted from the cement is furnished to the soil, and the elements in proportion of the cement are undisturbed. Further, the caustic lime, that

is the calcium oxid or calcium hydrate destroys acids of the soil injurious to the cement.

By the above process I procure a firm solid and durable concrete foundation 1, insoluble in water and at small cost. This is particularly important where stone is scarce and expensive. After the concrete has set and hardened I flush it with liquid asphalt 2. The soil that had been placed parallel with the side lines of the road or street is now mixed with a due proportion of calcium oxid or calcium hydrate and placed upon the asphalt flushed concrete foundation in layers 3. A hot asphaltic or bituminous cement or the like 4, properly fluxed may be now poured or sprinkled over the said layer. This operation may be continued until the topping is laid to a depth of from 4 to 6 inches. I then roll or tamp the said topping as thus laid, until it becomes well compacted. This operation, that is the laying of layers of soil and asphalt and the rolling, will cause the hot cement to work well into and become intimate with the topping soil. I now well flush the face of the road or street thus completed with a hot bituminous cement 5, and cover with clean sharp sand, screenings or the like 6, and again roll or tamp well. This process may be carried out in the simple and inexpensive manner described, but preferably the topping soil should be placed in a mixing machine, and the calcium oxid or calcium hydrate and hot cement placed therein with the soil and well mixed and then evenly laid upon the asphalt flushed concrete foundation. It is impossible to get as good "a mix" by rolling, no matter what the character of the rolling may be. Nor by tamping, even should the tamping be done by special machinery. It is to be observed that by mixing the calcium with the topping soils the acids in the said soils that are destructive to asphaltic or bituminous cements are destroyed. Furthermore the cement is saponified by the calcium and makes the paving indifferent to the changes of solar temperatures and practically eliminates aging, thereby procuring a permanent road and street construction.

What I claim is:—

1. The herein described mode of road, street and similar construction, which consists in mixing calcium oxid or calcium hy-

drate with the sub-soil *in situ*, thus supply-
ing the said sub-soil with lime required and
neutralizing the acids thereof, then adding
and mixing therewith Portland cement to
5 form a concrete foundation, then flushing
the face of the said concrete foundation with
a liquid asphaltic or bituminous cement,
then placing the topping soil thereon in
layers, the said topping soil having been
10 previously mixed with calcium oxid or cal-
cium hydrate, thus neutralizing the elements
in the said soil destructive to the said ce-
ment, and then successively placing over the
said layers of topping soil, hot asphaltic or
15 bituminous cement, then compressing the
whole, then flushing the same with liquid
asphalt, then covering the whole with grit,
screenings, sand and the like, and then again
compressing the same to a finished surface.
20 2. The herein described process of road,

street, and similar construction, which con-
sists in pulverizing the sub-soil, then suc-
cessively placing thereover, calcium oxid or
calcium hydrate, then mixing a due amount
of Portland cement therein, and when the 25
same is set flushing the surface with liquid
asphalt, then placing thereon the topping
soil mixed with calcium oxid or calcium
hydrate and hot asphaltic or bituminous
cement, then evenly placing this mixture 30
over the said concrete foundation, then
covering the finished topping with grit,
screenings, sand and the like and rolling
the same to a finished surface.

In testimony whereof I have hereunto 35
set my hand.

JOSEPH HAY AMIES.

Witnesses:

WILLIAM J. JACKSON,
P. SHLUNN.