

IMPROVEMENT IN CONCRETE PAVEMENTS.

Specification forming part of Letters Patent No. **221,096**, dated October 28, 1879; application filed January 10, 1877.

To all whom it may concern:

Be it known that I, ANTONIO PELLETIER, of Washington, in the county of Washington and District of Columbia, have invented certain Improvements in Pavements, of which the following is a specification.

My invention consists in novel compounds or compositions for the base and the surface.

In proceeding to lay my pavement I first grade and roll the ground, and then place thereon, preferably in two successive layers, a base or foundation prepared in the following manner: I first prepare an insoluble oxychloride by treating any separable soluble or insoluble oxide with the corresponding chloride, using, preferably, the oxides of the heavy metals. I next provide silicious sand, broken stone or gravel, or both, and hydraulic lime of tiel, terra-alba, or any other hydraulic material which, on being calcined, gives rise to an equivalent substance—such, for example, as sulphate of alumina, or other cheap salts of alumina or aluminous minerals, such as furnace-slag, feldspar, &c. I then take oyster-shell or other gas-house lime, dolomite limestone, or other equivalent form of lime, and thoroughly mix the same with the aluminous materials, the stone and gravel, and the oxide above mentioned, the materials being finely pulverized and the mixing effected while they are all in a thoroughly dry state. The agitation of the materials is to be carried on by hand or machinery until they are thoroughly and evenly mingled, after which water is carefully added and the agitation continued until the compound is reduced to a plastic or semi-fluid mass of uniform consistency, special care being taken to avoid an excess of water, the effect of which would be to destroy the strength and hardness of the material when set.

The material or beton thus prepared is placed in two or more layers upon the ground, and each layer thoroughly beaten and compacted, immediately upon being laid down, by means of rammers or beaters having a percussive action.

When the base or foundation has become firmly hardened and set I place thereon a

cushion layer composed of pure dry silicious sand or gravel mixed with pure bitumen. This layer, being rolled down smoothly in place, forms a permanently elastic or yielding cushion, and serves both to prevent the surface layer from cracking or crushing under heavy pressure, and also, by allowing the surface to yield slightly, to overcome the objections urged against the ordinary solid unyielding pavements, which are a prolific source of disease among the horses driven constantly over them.

The top or surface coating or superstructure, of one, two, or more inches in thickness, is prepared as follows: Take of purified Cuban asphalt or bitumen, fifteen parts; carbonate of lime or other talcose silicates, soap-stone, asbestos, coal-ashes, or any similar carbonaceous matter, fifty parts; clean sharp sand, about two hundred parts; oxide of iron, three parts.

The ingredients, except the asphalt or bitumen, which are to be melted separately, are to be thoroughly heated and dried on metal driers of any suitable construction, and while hot are thoroughly mixed with the melted asphalt or bitumen, and at the same time one part of chloride added and incorporated in the mass, a chloride of iron or calcium or manganese being used, according to the climate and the location in which the pavement is laid. In cold climates it is best to use chloride of calcium to act upon the lime; but in hot climates it is best to employ chloride of iron or of manganese to act upon the oxide of iron. The surface layer, after being laid down in place, is leveled and finished while hot by a heavy roller or by heated iron tamps; or it may be pressed or molded into blocks of any suitable size, and thus laid.

I do not claim the insulating or non-adhesive layer located immediately below the top or surface layer, and it is to be distinctly understood that nothing herein contained is to be construed as a claim thereto.

Having thus described my invention, what I claim is—

1. In a concrete pavement, the combination of broken stone or gravel, or both, with hydraulic lime of tiel, terra-alba, or hydraulic

lime or cement, and silicious sand, oxide of iron, and a chloride either of iron, manganese, or calcium.

2. In a concrete pavement, as a substitute for oxides and chlorides, the equivalent metallic salts, as herein specified.

3. In a concrete pavement, the aluminous salts, minerals, or slags, in combination with lime and salts of alumina, as specified.

4. In a concrete pavement, the combination of pure asphalt or bitumen, silicious sand, carbonate of lime, or the specified equivalent, talcose silicate, coal-ashes, and a metallic oxide and chloride, as specified.

ANTONIO PELLETIER.

Witnesses:

P. T. DODGE,
W. W. DODGE.