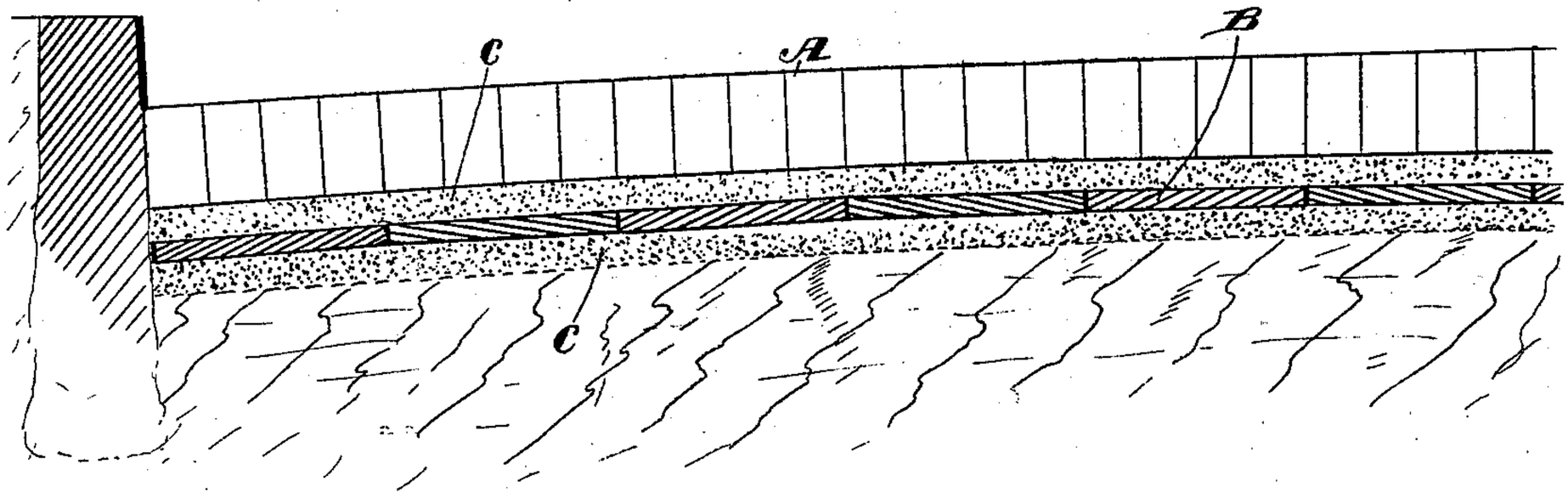
(No Model.)

V. A. GATES & M. LEVI.

STREET PAVEMENT.

No. 285,746. Patented Sept. 25, 1883.



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UNITED STATES PATENT OFFICE.

VIRGIL A. GATES AND MORDICAI LEVI, OF CHARLESTON, WEST VIRGINIA.

STREET-PAVEMENT.

SPECIFICATION forming part of Letters Patent No. 285,746, dated September 25, 1883.

Application filed July 21, 1883. (No model.)

To all whom it may concern:

Be it known that we, VIRGIL A. GATES and MORDICAI LEVI, citizens of the United States, residing at Charleston, in the county of Kanawha and State of West Virginia, have invented certain new and useful Improvements in Street-Pavements; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide, from certain cheap materials that are common to all sections of the country, and without the use of skilled or high-priced labor, a good and durable street-pavement fully adapted to meet all requirements and conditions ordinarily bearing on the matter of street-pavements, and not liable to be destroyed or permanently injured if at any time it becomes necessary to lay pipes or sewers beneath it, and at a cost so low that small towns, as well as large and wealthy cities, can be able to avail themselves of the advantages and comforts afforded by well-paved streets.

We have observed that street-pavements are usually destroyed, first, by the wearing away of, or, second, by the displacement of, the paving material used, or, third, by the settling or giving away of the foundation upon which the material is placed, and that, without regard to the kind of paving material used, it is essential that the contour of the street, as well as a smooth and uniform surface, be maintained, not only as a desideratum, but to prevent the standing of water and the formation of depressions and ruts; else the pavement would soon be destroyed or subject to continual repairing. It has also been observed that a board floor laid upon the ground, as demonstrated by the plank roads so extensively in use, is one of the best means of preserving the contour of a roadway; but it is not in the nature of wood to stand the wear and tear of travel for any considerable length of time; and then there are other features so objectionable as to absolutely preclude the use of boards as a paving material if laid upon the surface, especially in towns and cities.

It is also well known, and has been demonstrated by us during the past few years, that hard-burned brick are as well adapted to withstand the wear and tear of highway travel, all things considered, as any other material now used for the purpose, with possibly the exception of granite alone; and then a brick is always a known quantity in shape, size, weight, quality, and cost. Yet it has also been demonstrated that when used alone as a material for street-pavements their narrow bases are not sufficient to sustain them under heavy pressure and jolting. They yield in detail, thereby forming ruts and depressions, which soon render the pavement useless.

In view of these facts, we conceived the idea of a combination of these two materials, each to be applied to the purpose for which it is so well adapted only, and thereupon proceeded to make an experimental test, (referred to in the oath,) the result of which is the invention for which we now petition that Letters Patent may be granted us.

Our invention consists, essentially, in laying a close board floor upon the prepared ground to preserve the shape of the road, and as a foundation to sustain and uphold the harder material which is to rest upon it, and then covering the board floor with a layer of hard-burned brick as a shell, to withstand the wear and tear of travel, and by this means forming an improved street-pavement.

It can be constructed in the following manner at a net cost of seventy-two cents per square yard, under favorable circumstances: The grade having been properly reduced and dressed to the required shape, the ground should be covered with a layer of loose sand a few inches in thickness, to form a more perfect bed for the boards to follow, and to keep the boards from contact with the earth beneath, to form a sub-drainage, as against the effects of freezing weather. The sand can be struck off to a perfect surface by a moving templet made to suit the desired curve, and guided by slats set to grade-stakes. The boards to be used need not be more than one inch in thickness, and ought not to be less than ten (10) inches in width, as a rule. The best timber for the purpose is that least subject to rot under the circumstances. Good white oak has been used successfully. We prefer to dip the boards in hot coal-tar; but other preserving

material can be used. They are then carefully laid upon the sand bed—lengthwise with the street would be the most convenient way—from curb to curb, with a regular curve all the way. No gutters are necessary, except such as are formed by the crown of the pavement. This floor—the broad surfaces of the boards bridging over all minor inequalities of the grading, and so widely distributing all weights or pressure, and being so perfect a barrier from any thing solid passing from above or below—now forms a most complete and perfect foundation for the hard material to follow. It is best now to cover the boards with a layer of loose sand an inch or two inches in thickness, to form a more perfect bed for the bricks, which can be struck off with the moving templet, as done before. The use of the moving templet results in a mechanical effect and beauty of outline that is very pleasing to the eye. The bricks—hard burned—are now laid down. If they are of the ordinary shape of building-brick now in common use, they should be placed on edge and laid preferably "herring-bone" style, by which means all joints in the board floor are straddled. The seams are now well filled with sand, swept in, and the bricks settled in their beds with a flatter, well rammed. The pavement is now done. The boards, immovably fixed in their places by the weight of the brick, are protected from any possible wear. At the same time the floor protects the brick. By holding them up firmly in their places, they sustain each other, their corners are protected from chipping, and the smooth and uniform surface maintained does away with the concussion of jolting, and a perceptible elasticity tends to favor the bricks when subjected to a crushing weight. The bricks being now in place, their flat surfaces agreeing with each other and with the flat surface of the boards beneath, the bearings are perfect and equal, they can be broken only with difficulty, and cannot get out of place; and if at any time it is desired to lay pipes or sewers beneath the pavement, the material, being all disconnected, can be rapidly taken up and laid aside, and as rapidly replaced at small expense, no new material being required, and no patching to be done, everything fitting in its place.

As a result of the experiment caused to be made by us (referred to above) the city of Charleston, West Virginia, has within the last two years put down five thousand yards of street-pavement in accordance with the plan invented by us, and is now preparing to put down fifteen thousand square yards more in the same way.

The accompanying drawing represents a side view of a section of pavement constructed as above described.

A represents the bricks set upon their edges, B the board foundation, and *c c* the sand beds above and below the board foundation.

What we claim as our invention is—

The combination, in a street-pavement, of a shell of hard-burned bricks laid upon a board floor, having a bed of sand below and above it, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

VIRGIL A. GATES.
MORDICAI LEVI.

Witnesses:
R. P. WARREN,
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