2 Sheets—Sheet 1.

W. E. LAWRENCE.

Pavement and Roadway.

No. 211,749. **Patented Jan. 28, 1879.**

Fig. 1.

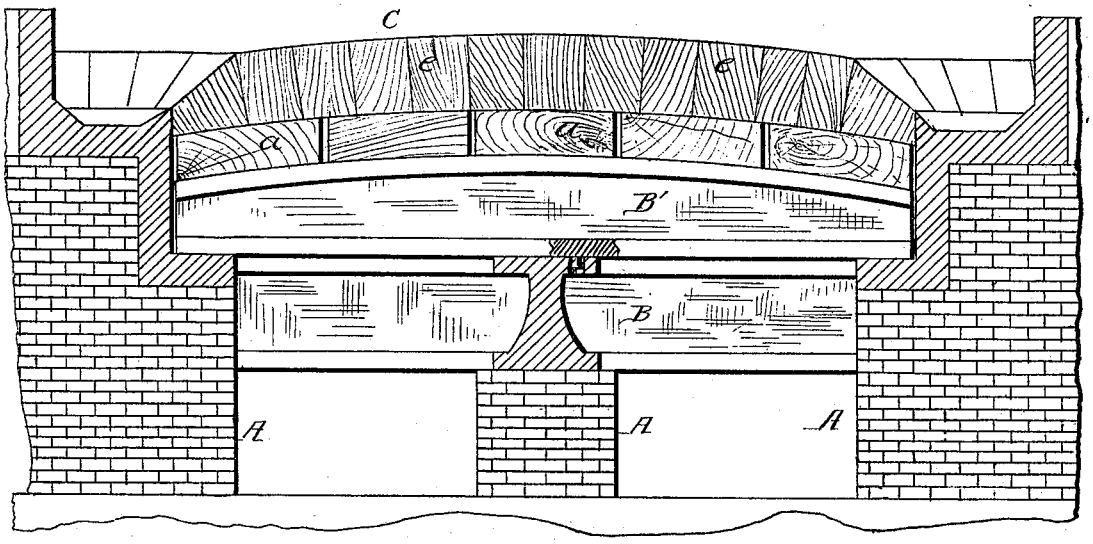
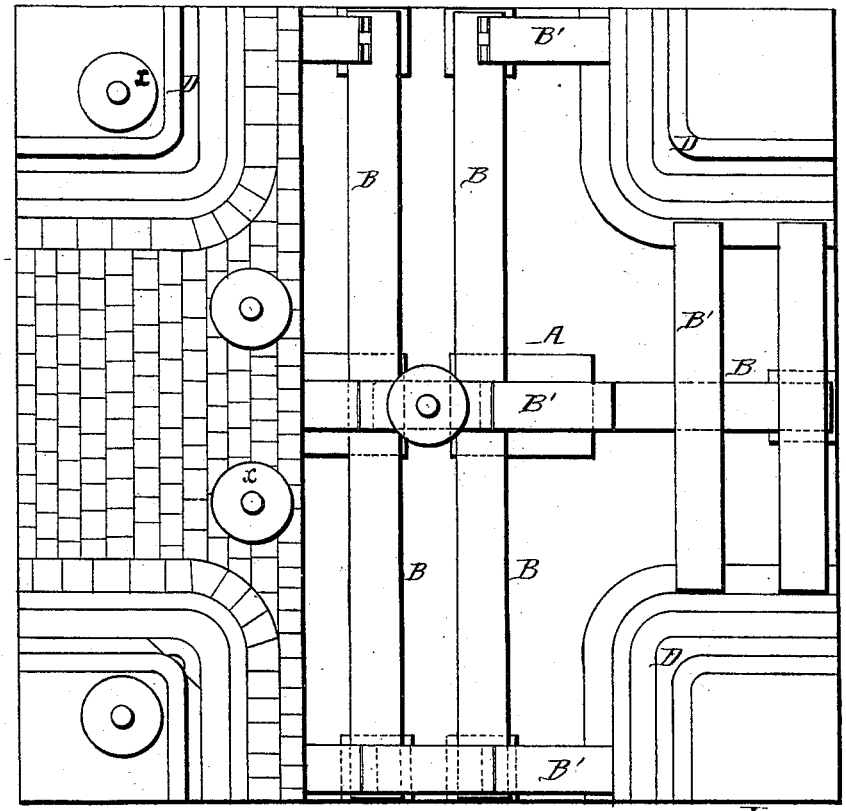


Fig. 2.



Attest:
William Paxton
Courtney A. Cooper

Inventor:
William E. Lawrence
By his attorney
Charles E. Foster

2 Sheets—Sheet 2.

W. E. LAWRENCE.

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Fig. 3.

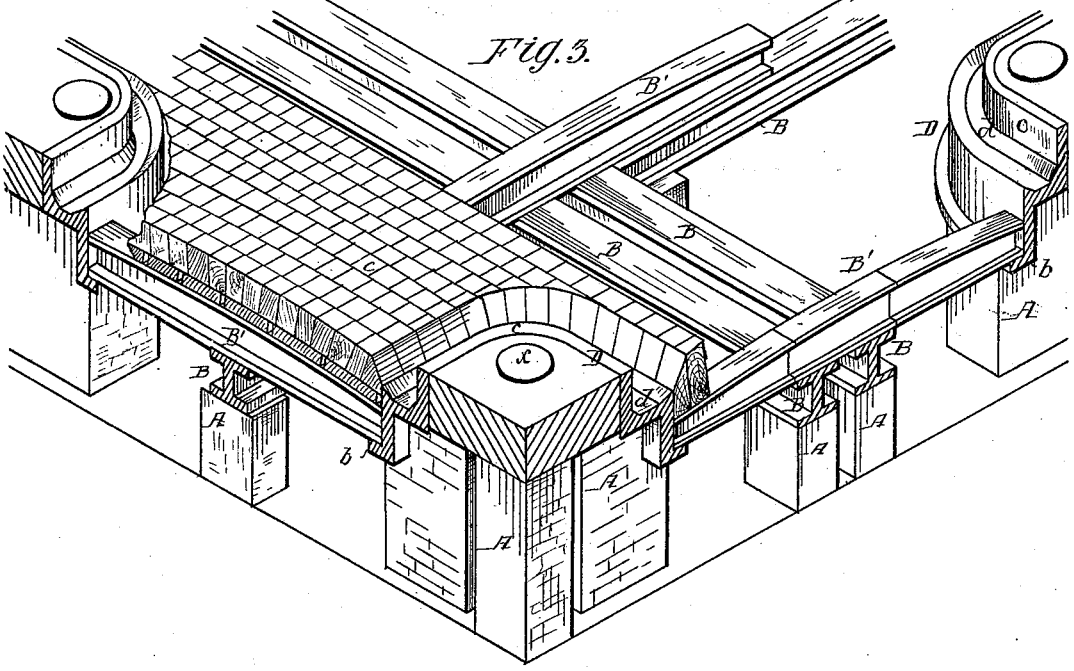
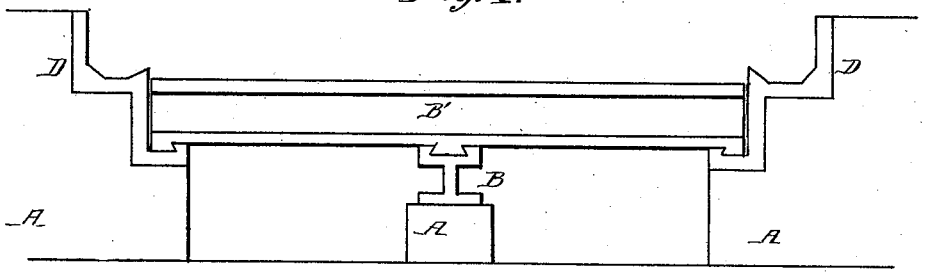


Fig. 4.



Attest:
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UNITED STATES PATENT OFFICE.

WILLIAM E. LAWRENCE, OF NEW YORK, N. Y.

IMPROVEMENT IN PAVEMENTS AND ROADWAYS.

Specification forming part of Letters Patent No. **211,749**, dated January 28, 1879; application filed November 27, 1878.

To all whom it may concern:

Be it known that I, WILLIAM E. LAWRENCE, of the city, county, and State of New York, have invented Improvements in Pavements and Roadways, of which the following is a specification:

My invention is an improvement (fully described hereainfter) in constructing pavements and ways and curbs, whereby a firm, durable, and economical structure is secured, liability to injury by frost or from sinking of the earth is obviated, and repairs facilitated.

In the drawings forming part of this specification, Figure 1 is a sectional elevation, showing parts of a roadway constructed in accordance with my invention. Fig. 2 is a plan view of Fig. 1; Fig. 3, a perspective view, and Fig. 4 a detailed modification.

The essential features of my invention are the foundation, the supporting-frame, and the facing.

Heretofore, in the construction of pavements, the bed of the road has always occupied a position above the level, accessible to the frost, with a consequent rapid destruction of the pavement, in a manner too well known to need explanation. In such pavements, also, the surface is frequently broken from the washing away of the earth beneath the facing, the breaking of sewers, &c., while insufficient packing of the bed would frequently result in the sinking of the face or curb.

In constructing my improved pavement, I first build a foundation consisting of a series of piers, A, of brick, stone, rubble, or other suitable material, extending to a depth below the frost-line, and on this foundation I place or secure a frame which supports the facing, the whole being sustained by the foundation, which cannot be affected by the frost, thereby maintaining the integrity of the structure.

The frame may consist of any suitable arrangement or combination of metallic or wooden beams or girders, either laid upon the piers disconnected from each other, or bolted together so as to form a continuous structure, which is covered by beams or planks *a*, on which is laid the stone, wood, or other facing, C.

Whether the frame-beams are independent or bolted together, the whole with the planks *a* will form a homogeneous structure wholly supported by the piers, so that the yielding of the earth at any point, or, in some instances, even the sinking of one or more piers, will not alter the general level of the pavement. While the frame may consist of any suitable arrangement of beams and planks, I prefer to employ a structure corresponding to that shown in the drawing, in which base-beams or stringers B constitute the support at the centers of upper cross-beams, B′, the ends of which rest upon the piers, or preferably upon the flanges *b* of cast-metal sections D, constructed to constitute the curb *c* and gutter *d*, forming a neat, cheap, and effective cap-piece for the side foundations, especially at the corners.

The beams B B′ may be bolted to the foundations and to each other, or may be secured by dovetailed connections, as shown in the modification, Fig. 4.

In some instances the cross-beams may be in sections, as shown in Figs. 2 and 3—a preferable construction when they are made of cast metal.

The cross-beams are arched to conform to the desired arch of the roadway, and support directly the planks *a*, which are of heavy oak or other suitable material, and on which are laid the blocks *c*. These blocks may be of wood or stone, and may be laid in cement or in any suitable manner; or a concrete or asphalt facing may be used instead of blocks. Thus constructed, the frame and facing depend wholly for their support upon the piers, and are not affected by any ordinary changes in the earth, which, to afford greater steadiness, may be packed to the level of the planks *a*, or may be below the lower beams or stringers, affording space for the reception of gas-pipes, water-pipes, &c., to which access is had through man-holes at *x*. Should it be necessary, the facing C may be removed as easily as in roads of the ordinary construction.

I do not confine myself to the particular arrangement of piers, stringers, and girders herein described and shown, as the same may be varied without departing from my invention, and may necessarily depend upon the character of the way, the nature of the soil, the width of road, and other circumstances.

I claim—

1. The combination, in a roadway, of piers A, beams or stringers B, transverse beams B′, and planks *a*, supporting the facing, substantially as set forth.

2. The combination, in a roadway, of a series of piers, A A A, supporting a series of girders, and a facing supported by said girders, substantially as specified.

3. The cap-pieces D, constructed with a vertical flange, *c*, forming the curb, a horizontal sunken flange forming the gutter, and a lower flange, *b*, constituting a rest for the beams, as set forth.

4. The combination, in the frame supported by the piers, of beams or girders having dovetail attachments, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. E. LAWRENCE.

Witnesses:
SAMUEL KILPATRICK,
WALTER BURT.