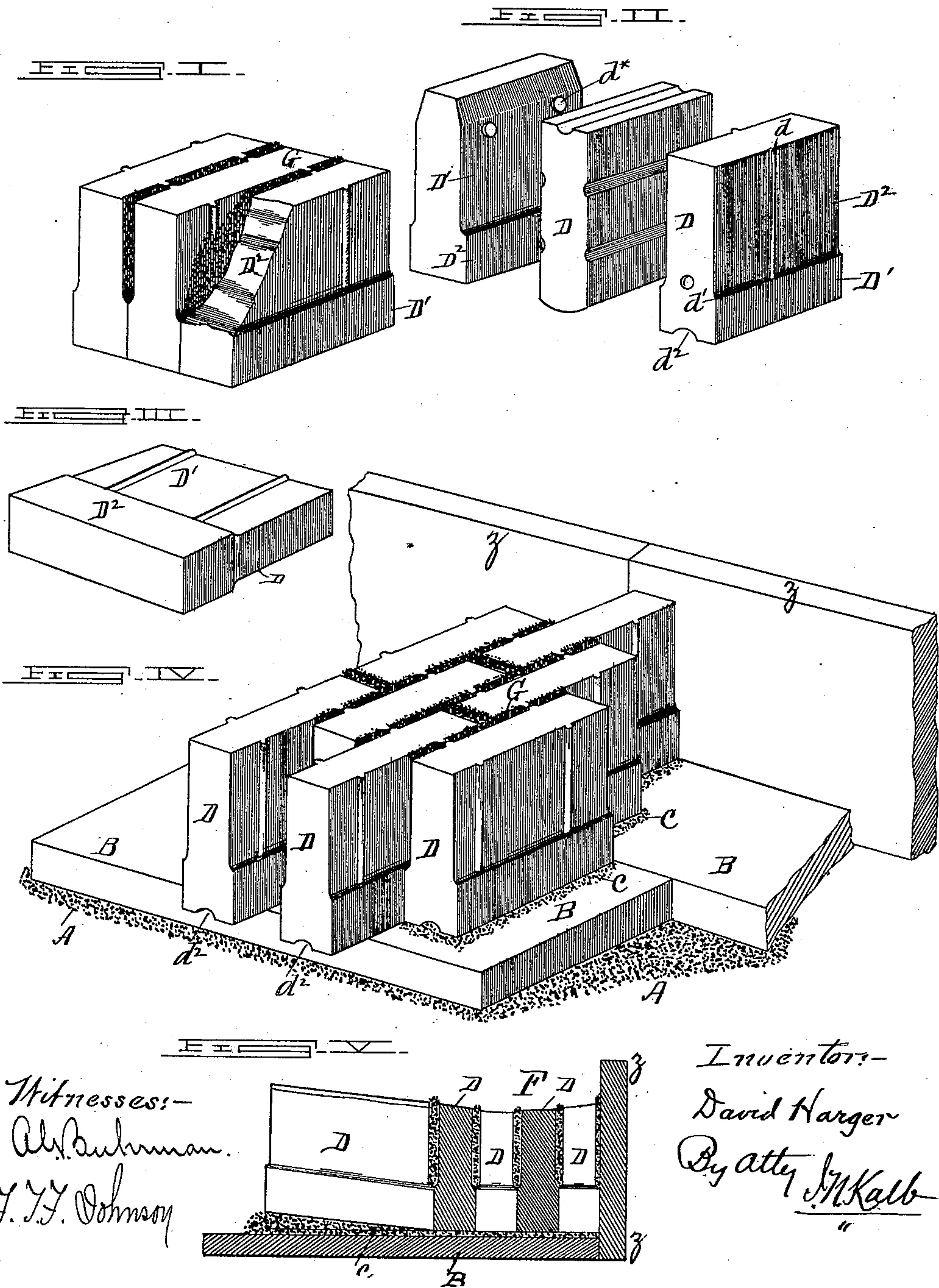


(No Model.)

D. HARGER.
PAVEMENT AND PAVING BRICK.

No. 401,030.

Patented Apr. 9, 1889.



UNITED STATES PATENT OFFICE.

DAVID HARGER, OF DES MOINES, IOWA.

PAVEMENT AND PAVING-BRICK.

SPECIFICATION forming part of Letters Patent No. 401,030, dated April 9, 1889.

Application filed December 21, 1888. Serial No. 294,279. (No model.)

To all whom it may concern:

Be it known that I, DAVID HARGER, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Pavements and Paving-Brick; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to pavements and paving-brick, and has for its object the provision of a pavement formed of burned brick made of clay or a mixture of clays with an under tiling of the same or other suitable material, and of a peculiarly shaped and constructed brick, which shall possess properties peculiarly desirable in a paving-brick.

In carrying my invention into practice I first lay a bed of sand, according to the sort of ground, upon a suitably leveled and prepared roadway or foundation, and then lay on the tiling, which is preferably formed of burned clay, brick of the ordinary size and shape used in buildings, or other suitable material. These are laid flatwise upon the bed of sand and a layer of sand of about one inch (more or less) in thickness is placed upon the tiling and the paving-brick set upon the sand. The paving-brick are made about the same size as or a little larger than ordinary building-brick and are set edgewise upon the bed prepared as above described and in such relative position to each other as to break joints, the bricks in one row breaking joints with those in the next and the rows running, preferably, substantially straight across from one curb to the other; but they may be set diagonally or in line with the direction of the street. The paving-brick is made with an enlarged base extending about one-quarter of an inch past the body of the brick on both sides, and, if desired, at the ends, so that when set against each other in the pavement there will be a space of about half an inch (more or less) between the tops of each two rows of bricks, which can be

filled up with sand, and when tamped down by driving will form a top drainage for the pavement. The enlargement at the bottom extends only about one-third of the height (more or less) of the brick, preferably. I may make the top of the brick slightly rounded, or it may be flat with beveled edges; and to entirely obviate tilting I may provide vertical ridges or ribs at one or more points in the length of the brick, which will fit against the side of the brick in the adjoining row and completely secure the bricks against tilting sidewise, while at the same time the caking will not be interfered with. One or more buttons or projections may be used in lieu of the ribs or ridges, if desired. I may also provide longitudinal grooves in the sides of the bricks, into which the sand can pack and hold the bricks firmly against rocking. On the under side of the brick I may form a longitudinal groove which will set over the sand and prevent the bricks from slipping, moving, and rocking. This groove facilitates the burning of the brick, and I may mold them with a longitudinal bore through them about centrally, which will insure a uniform burning and at the same time permit any steam which may be lodged in the brick by burning to readily and quickly escape.

The accompanying drawings illustrate what I consider the best means for carrying my invention into practice.

Figure 1 is a perspective view of three bricks set up with one broken away and sand between them. Fig. 2 is a perspective view of several bricks. Fig. 3 is a perspective view of a brick laid down. Fig. 4 is a perspective view of a portion of pavement. Fig. 5 is a section of one edge of a pavement.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the foundation or bed of sand on which the tiles B are laid.

C is the coating or covering of sand, of about one inch (more or less) in thickness, which is placed upon the tiling.

D are the paving-bricks, which constitute the upper surface of the roadway. They are preferably laid transversely to the curve Z, as shown. The paving-bricks are set in rows

and the bricks in one row break joints with those in the next throughout the pavement, as seen.

The paving-brick is formed with an enlarged base, D' , which extends out from a smaller upper portion, D^2 , about one-quarter of an inch on each side, and, if desired, at the ends also. The junction or offset between the body and base is standing, as shown at d' , to afford free passage downward for the water if any falls before the pavement is properly packed.

On the sides of the bricks I may provide vertical ribs d , which serve to make contact between the two rows of bricks all the way to the top to hold them straight when first laid; or buttons may be used, as shown at d^* , for the same purpose. In this specification and claim I will use the term "projections" as signifying these two things, d and d^* .

On the bottom of the brick I provide a longitudinal groove, d^2 , which will be filled with sand when the brick is laid and will prevent it from slipping and will stiffen and hold the pavement securely when being laid.

The top of the brick may be rounded, as shown, or may be flat and provided with sloping edges, as shown. The bottom of the brick is preferably flat, and may, if desired, have the rounded or V-shaped groove d^2 ; but, if desired, it may be rounded or may be flat with sloped or beveled edges, as shown.

I may have a groove, d^5 , in the top of the brick, if desired. I may, if desired, make longitudinal grooves in the sides of the bricks, as shown at d^3 , for the sand to fill up and pack the bricks firmly together.

I may make a hole, as d^4 , through the bricks, which will cause the brick to be burned uniformly throughout, and also enable the steam generated in the interior of the brick when being burned to escape if it is burned before it is thoroughly dried.

To throw the drain or gutter of the street a little way from the curb, I prefer to place some bricks lengthwise along the curb, as shown at F, which may occupy about two feet (more or less) of the width of the street along the curb, and may be sloped slightly downward or curved downward from the curb and then upward toward the transverse bricks, the pavement running upward from the curve to the center of the street. This makes a very good pavement and guttering therefor, and this construction of pavement braces the curb and also throws the water away from the curb; but the street may be sloped right down to the curb, if desired. The packing of sand, G, between the paving-bricks will rise slightly above the top of the brick and deaden the noise of horses and vehicles passing over it, and also will protect the brick. It will also calk the pavement and give a complete surface-drainage and act as a pressure to keep the bricks fixed. The sand between the bricks also gives a foothold for horses and keeps them from slipping. This sand or mixture of dirt with it which

accumulates on top in use, being a soft material, does not hurt the horses' feet, and is much better than gravel for this reason. The calking acts in much the same manner as the calking of a vessel, the great pressure upward against the vessel being very much greater than the pressure on the pavement, so that the calking of the pavement will not have near so much pressure, and will serve to give the pavement a complete and indestructible surface-drainage.

Where the ground is very solid, the under bricks or tiling, B, may be omitted and the paving-bricks D placed right down on the under layer, A, of sand, and the calking will prevent the penetration of the water. This will lessen the cost of the pavement.

Instead of sand for the calking, cement may be used, if it should be desired; or, if desired, tar and sand can be used for the calking, or tar alone; or tar can be put on the cement and then sand placed upon the tar.

The peculiar shape of my brick possesses a very decided advantage over the ordinary straight-sided brick, which cannot be placed so close together as to be water-tight, and still cannot be calked properly, owing to the fact that they lie too close for this purpose, while, on the other hand, my form of brick with the offset affords means for calking, and at the same time they lie close at the base and brace each other; also, the plain ordinary bricks afford no foothold for horses, and, there being no calking, such ordinary bricks create great noise and slipping. Bricks do not grind up into powder to be blown into residences, &c., mixed with other poisons, as do granite or other stones of various sorts, and hence from a sanitary point of view brick is preferable to stone.

In making my bricks I prefer to make them by forcing the clay through a die and cutting off in suitable lengths, as in this way they can be easily formed into the desired shape.

The ordinary brick or my novel construction of brick are both preferably rounded on top, and I desire to be understood as distinctly covering such a rounded brick when the same are set up for a pavement. I may mix clay with an iron dust to make the brick somewhat pliant and tough; or the dust from coke may be put in the clays. I may also mix a little light glass sand in the clay, as they are mixed with or without the iron or coke dust.

A brick pavement is easily repaired, as, if a brick or a section of bricks should sink, the upper paving brick or bricks can be raised without disturbing the lower tiling, and sufficient sand put in and tamped down to bring the brick or bricks up to the proper level. So, also, if one or more of the bricks in any portion of the pavement should become worn off it or they can be raised up, sand inserted and tamped down, and the brick restored without disturbing the tiling; and if the pavement is to be removed in order to lay water or gas pipes the bricks can be taken up easily

and as easily replaced without waste of time or loss of the paving material. Thus it will be seen that this pavement possesses greater facility for repair than the asbestos or cement pavement, which cannot be repaired without becoming ridgy and uneven, and when patched always leaves a crack which constantly widens and allows water to get under the pavement, which in great heat or intense cold will raise and break the pavement, while at the same time my brick pavement will afford as effective surface-drainage as the asbestos when the latter is new and better than the asbestos when it has become old and is patched.

It is also evident that my pavement is a substantially noiseless one, so that no trouble is experienced to windows along the street, and nervous persons living on the street where it is laid suffer no inconvenience or unpleasantness from the passage of horses and vehicles over it. After the bricks are laid and the spaces between them filled I may, if it is found desirable, sweep the surplus sand off and then sprinkle the street with a mixture of sand and earth or soapstone or any substance of the sort, which will by the wash of rain and the passage of teams be calked down upon the sand in the spaces and more rapidly make the surface-drainage complete than if this is not done and the dirt brought on by

teams, &c., is depended upon to make the calking complete.

I am aware that foundations for pavements have been made with a layer of sand and tiles laid thereon and a second layer of sand upon which brick are laid. I am also aware that bricks have been made with an enlarged base projecting on one or both sides, and a V-shaped projection above it, and a corresponding groove on the opposite side, and a longitudinal V-shaped groove on its bottom. These I do not claim; but

What I do claim is—

A pavement or roadway consisting of a foundation of sand or the like, a tile or brick laid upon said sand, a second layer of sand, and a brick or block set upon said second layer in an upright position, said brick or block having a longitudinal groove in its bottom and an enlarged base projecting on each side, a reduced upper portion being provided with vertical projections or ribs on each side of the brick for equalizing the spaces between the bricks or blocks when set, said spaces being filled with sand or like material, as set forth.

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

DAVID HARGER.

Witnesses:

I. N. KALB,
JAMES H. GRIDLEY.