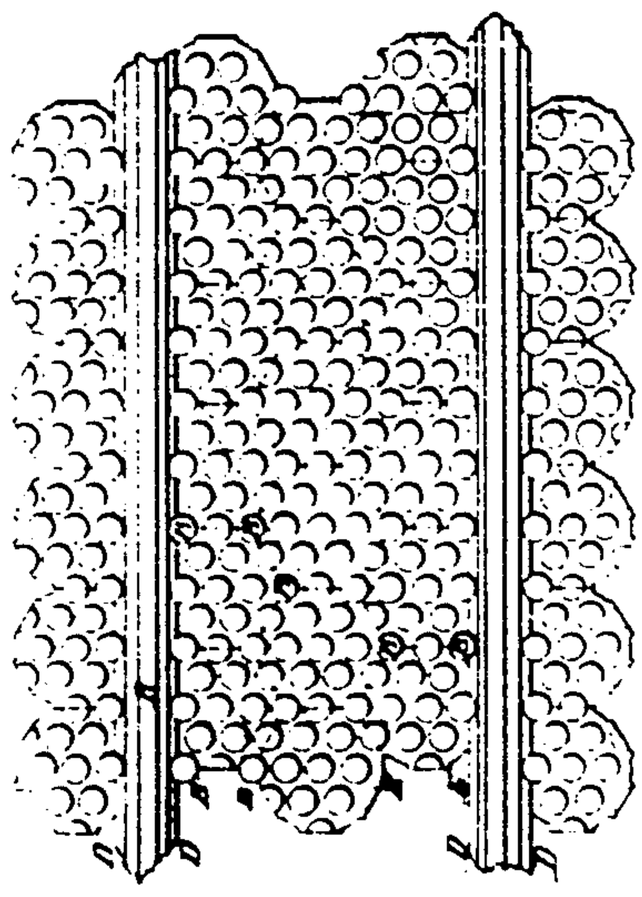
Sheet 2 · 2 Sheets

A. P. Robinson,

Iron Pavement.

No. 14,736. Patented Apr. 22 1856.



Witnesses.
[illegible]

Inventor,
A. P. Robinson

UNITED STATES PATENT OFFICE.

ASA P. ROBINSON, OF NEW YORK, N. Y.

CAST-IRON PAVEMENT.

Specification of Letters Patent No. 14,736, dated April 22, 1856.

To all whom it may concern:

Be it known that I, ASA P. ROBINSON, of the city, county, and State of New York, have invented a new and useful Improvement in the Application of Cast-Iron to the Purposes of Street-Pavement and Street-Railways; and I declare the following to be a full and exact description of the same, reference being had to the accompanying drawings as a part of this specification, in which—

Figure 1 is a plan showing several of the cast iron pavement blocks in place in connection with a rail. Fig. 2 is a vertical section of one of the cast iron pavement blocks on the line C, D. Fig. 3 is a vertical section on the line A, B, exhibiting the blocks and rail in connection and also the key for locking the blocks and rails together, and Fig. 4 is a perspective view of the key. The scale of the drawings is one half the full size.

I make the pavement block of a cylindrical form with six tangential flat surfaces at equal distances apart, raised upon its circumference as shown in Fig. 1, letter J. The upper end of the cylinder is closed and forms the surface of the pavement. I make the cylinders about four inches in depth but they may be longer or shorter as may be deemed expedient. I also make them about twelve inches in diameter but do not confine myself to this particular size. The blocks being of uniform size any one is entirely surrounded by six others all being laterally in contact. The sides of contact are the tangential flat surfaces raised as before mentioned on the surface or circumference of the cylinder.

By reference to Fig. 1 it will be seen that around each block are left six triangular shaped interstices with the curved portions of the cylinders forming their sides, letter I. These curved portions may however be flattened making the blocks twelve sided. In each of these interstices after the blocks are laid in place I insert a key of the form shown in Fig. 4. These keys are cylindrical at the upper end, being formed with a square or triangular arbor or hole for the reception of a wrench. The lower end of the key is of a three armed section or it may be cylindrical also. On the sides of the key are formed and cast three projecting lugs at a convenient distance below its upper end, these lugs being of the form necessary to fit the interstices I. The key being inserted and the wrench applied, a turn of one sixth of a circle forces the lugs into recesses cast in the sides of the blocks for their reception as shown in the plan and sections, letter E. Thus each block is sustained vertically and rigid by the six surrounding it. This operation may be reversed by casting the blocks with the top surface projecting out slightly from the circumference of the cylinder (I adopt a projection of three quarters of an inch as being sufficient), letter A, Fig. 1, amended drawings, retaining the same arrangement of six flat sides of contact, without forming an entire sexagon but leaving the same interstices for the keys, and in this case I cast the key with a boss on the top large enough to cover the whole interstice letter B, Figs. 1, 2, 3, amended drawings, and I dispense with the lugs on the key as well as the recesses in the sides of the blocks, the three arms on the lower portion of the key, letter C, Figs. 1 and 2, amended drawings, being widened so that when turned by the wrench they pass under the projecting portion A of the top surface of the blocks. The blocks by means of these projecting surfaces are thus confined between the bosses on the top of the key and the arms of the key, below.

In the Terry pavement recently laid in the cities of New York and Boston the blocks depend for support upon each other by means of three lugs cast upon the upper end, projecting upon three contiguous blocks which in their turn have similar lugs. The stability of any one block depends merely upon the small amount of bearing given to it by the thin edges of the cylinders and partitions and upon the assistance given to it by three of those that surround it. In order to take up any one block for the purposes of repair of any kind or for the purposes of laying pipes, it becomes necessary, in order to unlock it, to turn the three blocks surrounding it, so that it may be relieved from these overlying lugs. Although it is claimed that by this process any one block may be unlocked, yet it is theoretically impossible (as they are constructed) and in practice it is found that they can only be raised by commencing at the curbstone of the street and taking up such a number of blocks along the line of the curb stone, as will form the base line of a

triangle, the apex of which is the block it is desired to raise. Practically, any one block can only be raised in this way, or by moving a great number laterally, so as to obtain space enough around the block to be raised, as to relieve it from the lugs. It is evident that if there be space enough between the blocks to permit of this lateral movement, no benefit would be derived from arching the pavement, but all must depend for stability, upon the small amount of bearing surface furnished by the thin edges. Even if laid in contact, they touch each other only at mere points near the top, and the bearing surface being sufficient to prevent movement, these points of contact are worn off in a short time, so as to destroy any possibility of benefit from the arch.

By the form I adopt long surfaces are brought in contact between any two blocks and as each block has six flat sides, when once laid in place the action of horses or vehicles cannot move them; they are readily unlocked and removed by turning the keys; the benefits derivable from arching the pavement are made available; and instead of their stability being dependent upon merely the bearing of the sharp edges of the cylinders, the whole area of the block is used. The surface presents a perfect foot hold for horses while for the passing of vehicles it is substantially smooth: it is free from dust and mud and easily swept and cleaned.

The blocks may be filled with concrete, mortar, or other suitable material giving additional support to the top surface.

The rail is formed with the usual groove for the reception of the flange of the car wheels and is of the section shown in Fig. 3, letter G. It may be cast of any required length. On each side of the rail are formed rabbets K at the same depth below the top surface or tread as the recesses in the sides of the blocks. The blocks laid next to the rails, are cast with a segment cut off to the line of two keys, as shown in Fig. 1, letter H. The rabbets in the sides of the rails, receive the lugs on the keys and the rails are thus confined to the blocks in the same manner as the blocks are confined to each other. The under side of the rail is made hollow, and the sides extend to the same depth as the blocks. This hollow space may have cross partitions at proper intervals to strengthen the rail and may be filled with concrete. When the pavement blocks are cast with the top surface projecting and the operation of keying is reversed, as described, I make the rails with a flange on each side (letter D, Figs. 3 and 5, amended drawings) or with a series of projecting lugs, at proper intervals to suit the dimensions of the blocks, instead of making them with rabbets. The key shown in Fig. 2, amended drawings, and at letter B, Fig. 3, confines the rails to the blocks in the same manner as it confines the blocks together. The whole being thus confined and locked together, no timber substructure is necessary, but the rail becomes a part of the pavement itself, and in case a rail is injured or broken, no spikes are to be drawn but it may be taken out, and a new one substituted by simply turning the keys which confine it.

The ordinary street railway in use in ordinary pavements requires an expensive wooden substructure which is constantly decaying and needing renewal, and there being no bond between the rail and pavement, constant repairs are needed to keep both on the same level. Either the rail settles below the pavement or the pavement below the rail, offering serious obstructions to the passing of ordinary vehicles. My combination avoids these difficulties, and presents a rail way always upon the same level as the pavement.

Having described the form of my pavement and railway and the mode of laying them and locking them in place and set forth their advantages over the ordinary forms in use. I declare that I do not claim the application of cast iron to the purposes of a street pavement or a street rail way, neither do I claim pavement blocks of a cylindrical form or with any particular form of surface, but

What I do claim is—

1. The cylindrical form with the tangential flat surfaces raised upon its circumference, as described for contact between the blocks.

2. I also claim the peculiar manner as described of keying the blocks together and of keying the blocks to the rails, to prevent vertical motion and to admit of any one block or rail or any number of blocks or rails being moved, without disturbing others not required to be moved by means of the triangular formed spaces I the rabbets F and the keys Fig. 4 or by means of the projecting surfaces of the blocks A, Fig. 1, and the flanges or lugs on the rails D, Figs. 3 and 5, and the key, Fig. 2 of the amended drawings or any similar equivalent arrangement as substantially set forth in the specification and drawings.

A. P. ROBINSON.

Witnesses:
F. R. C. KITTREDGE,
THOMAS NICHOLS.