

C. Warner,

Iron Pavement,

N^o 22,835.

Fig. 1.

Patented Feb. 1. 1859

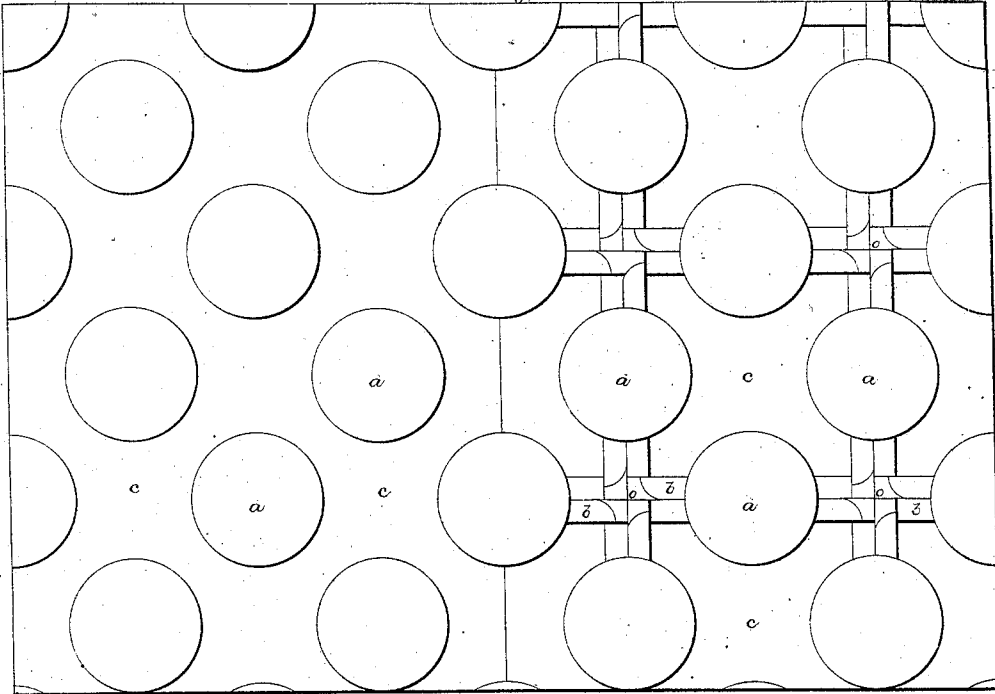


Fig. 2.

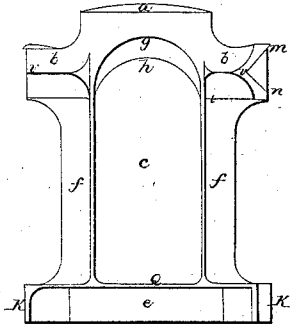


Fig. 3.

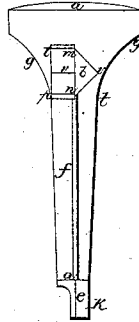


Fig. 4.

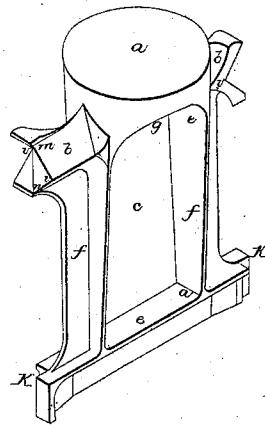


Fig. 5.

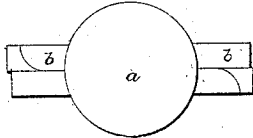
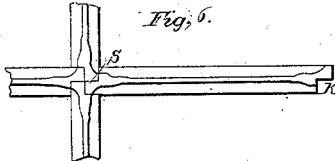


Fig. 6.



Witnesses;
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UNITED STATES PATENT OFFICE.

CHAPMAN WARNER, OF NEW YORK, N. Y.

CAST-IRON PAVEMENT.

Specification of Letters Patent No. 22,835, dated February 1, 1859.

To all whom it may concern:

Be it known that I, CHAPMAN WARNER, of the city, county, and State of New York, have invented a new and Improved Mode of

5 Making Iron Pavements; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

10 Figure 1 is a plan of the pavement laid; Figs. 2 and 3 a side and end elevation of the frames composing it; Fig. 4 a perspective view, and Figs. 5 and 6 a plan of the top and bottom of the same.

15 My invention consists in constructing the pavement of iron frames (Figs. 2, 3, 4, 5, 6,) which when laid together at right angles to each other form a self sustaining structure by mutually binding and supporting each
20 other; and which, by their form and connection, provide a footing for the horse that secures him from slipping; yet offers no irregularity which can injure his frog, or loosen his shoe; while at the same time a
25 smooth surface is furnished for the wheel and the greatest possible strength is attained with the least weight of iron.

To complete the traveling surface and increase the security of the foothold, as well as
30 to protect the foundation from any injury from water or frost, and give greater firmness to the whole, the space left by the frames (*c*, Figs. 1, 2, 4) is filled with a mixture of sand or gravel and cement, or with
35 such other composition as may prove most suitable to the purpose and most convenient in the locality where the pavement may be used. Thus finished a way is formed which, in addition to its other advantages, will require but little labor and expense to keep
40 clean.

To enable others skilled in the art to make and use my invention, I proceed to describe its construction and operation.

45 The separate iron frames which combine to form the pavement (Figs. 2, 3, 4, 5, 6,) are all alike, their general form being that of a parallelogram. A vertical section of the bottom (*e*) and a horizontal section of
50 each side (*f*, *f*.) shows a T shape, the stem of the T being downward in the bottom and outward in the sides, the latter uniting with the top and bottom in a curved bracket. The flange of the bottom (*g*) is about half
55 an inch wide—that of the sides increases from this width at the bottom to three

quarters of an inch at the under side of the cross-head at *t*, a distance of about three inches. A cross-head (*b b*) and a boss (*a*) form the top. The ends of the cross-head
60 are connected by the boss, the under side of which, for the purpose of securing additional strength, is doubly arched, the main body of the boss being itself arched as at *g*, while it is still further supported by an arched web
65 thrown across in the center, from side to side of the frame as at *h*; thus bringing into play the lateral compressive strength of the cross head in resisting any weight upon the boss, and diffusing its effect through the
70 system of frames. The boss, which forms the traveling surface, is two inches, more or less, in diameter, with a thickness varying from three eighths to about seven eighths of
75 an inch, as required by its peculiar construction. Its upper side has a convexity due to a radius of five inches, as shown at *a*, Figs. 2, 3. The whole height of the frame is five inches—its width, between the bottom and cross head about two and three quarter
80 inches.

In forming the pavement the frames are placed at right angles to each other as in Fig. 1. The ends of the cross heads project about half an inch beyond the side outlines
85 of the frame, which fixes the centers of the bosses about four inches apart, measuring in the line of the frames. As, however, by this rectangular arrangement, the square formed by any four bosses on any two ad-
90 jacent and parallel lines of frames, is occupied by the boss of the frame connecting these two lines, the diagonal distance of the boss centers apart is only three inches or thereabout. These distances may be in-
95 creased or diminished as future experience shall determine to be most proper, as such variations do not affect the subject matter desired to be patented.

The ends of the cross head are so formed
100 that the four which abut make a close and compact joint, (as at *o*, Fig. 1,) by which each frame is not only sustained but confined in its place by the others, so that it is impossible for any one of them to rise above
105 or settle below the regular surface of the street. This is accomplished by throwing the ends of the crosshead into the form of two solid triangles, (Figs. 2, 3, 4,) the one projecting and the other indented, their ver-
110 tices (*v*, *v*.) being in the same horizontal line but at right angles to each other, and

one line (m, n) being common to the base of each. This projection and indentation alternate on the different ends of the same frame, their positions being reversed, so that
 5 the projection of one end answers to the indentation of the other, and where any two are placed at right angles to each other the projection of the one exactly fitting the cavity of the other. The outline presented to the
 10 eye at either end by this arrangement is that of a united triangle and parallelogram, (Fig. 3, l, m, v, n, p .) the triangle solid, the parallelogram indented.

The ends of the base of the frame, (k, k),
 15 which also project like the cross head about half an inch beyond the sides, make a lap joint (s , Fig. 6.) answering to the joint above, by which lateral motion is prevented and the stiffness of the whole structure in-
 20 creased.

To give an arched outline to the street or pavement, the projections of the base are slightly less than those of the cross head, and the surface of the joints above and below are
 25 so modified by a trifling inclination as to conform to it.

When the pavement is employed for side walks, garden paths, or in any position where less strength is required, the size and
 30 weight of the frames may be reduced, and

loose sand or gravel be substituted for the concrete, and an ornamental as well as permanent way thus obtained.

What I claim as my invention and desire to secure by Letters Patent, is—

The mode of constructing pavements of
 35 iron frames, of any size, substantially of the form described above and illustrated by the accompanying drawings, placed at right angles to each other—each surmounted by a
 40 single boss which constitutes the traveling surface—it being so arched and placed upon the frame and the frames so connected with each other that the pressure arising from a
 45 weight imposed upon any boss, or upon any part of it, shall not be borne exclusively by any one part of the frames, but shall be diffused over it, and over the adjoining frames—the manner of connection at the
 50 same time preserving the regularity of the surface by preventing the elevation or depression of any one boss above or below the surface of the others, the space left by the frames to be filled with any material which the circumstances of each particular case
 55 may determine.

CHAPMAN WARNER.

Witnesses:

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