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L. A. PERRY

ROADBED CONSTRUCTION

Filed Sept. 24, 1924

Fig. 1.

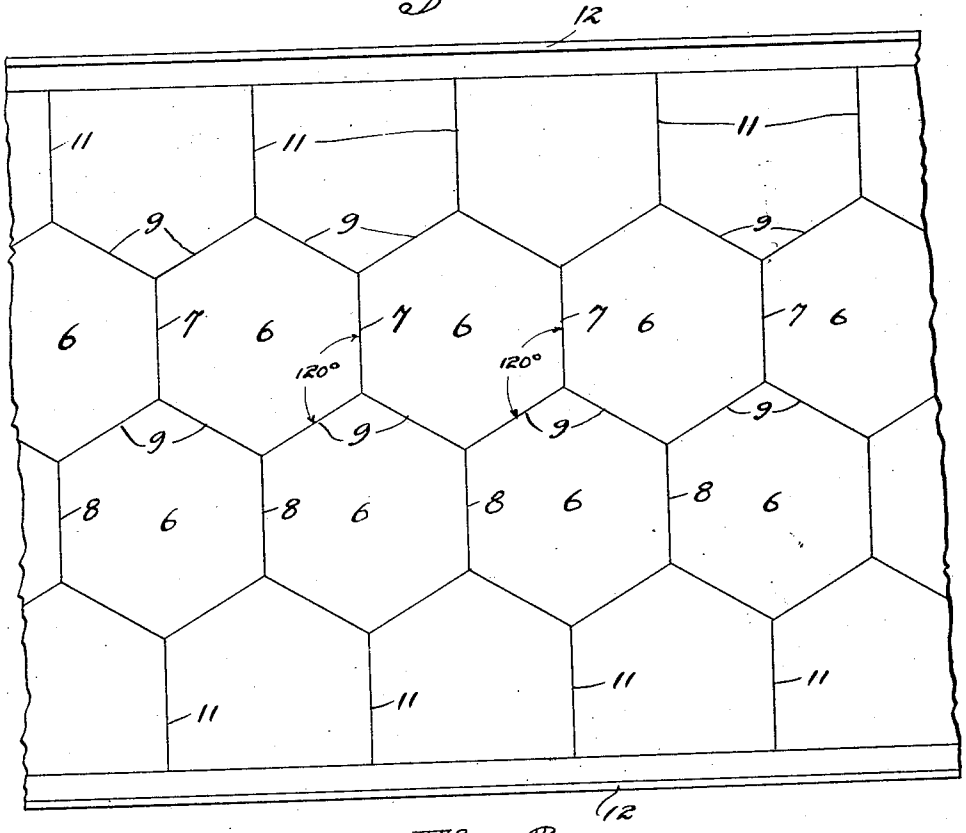
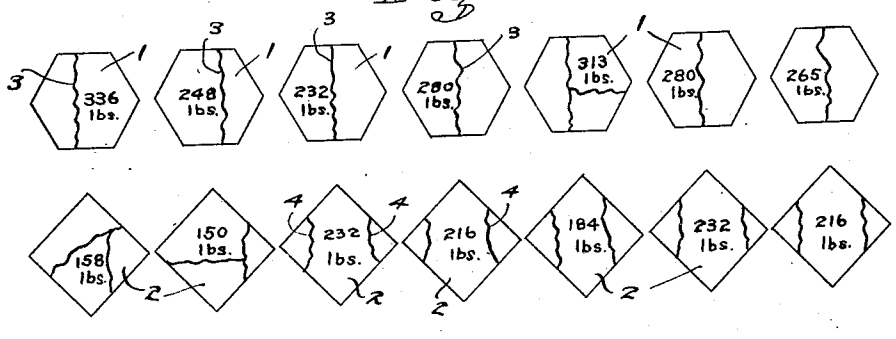


Fig. 2.



INVENTOR.
L. A. PERRY.
BY Munn & Co.
ATTORNEYS.

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UNITED STATES PATENT OFFICE.

LEWIS A. PERRY, OF LONGVIEW, WASHINGTON, ASSIGNOR OF ONE-HALF TO HAROLD O. ROOT, OF LONGVIEW, WASHINGTON.

ROADBED CONSTRUCTION.

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The present invention relates to improvements in road bed construction and has for its particular object an arrangement of units or slabs in such a manner that the single units will stand a maximum of pressure at any point before breaking. It has been ascertained by a series of tests and laboratory experiments as well as by actual use on a road bed that the hexagonal form of slab is better adapted for road bed construction than the square form, in view of the fact that when a slab of this character is loaded either in the center or at both ends, the maximum stress occurs along a central line, that is, along a line which offers maximum resistance to fracture.

This statement is further borne out by the following facts: The longest side of the hexagonal slab is less than that of one four-sided figure of equal area whereby bending moments are minimized. The hexagonal slab covers an area equal to that of a square slab with about ten per cent less perimeter, which offers the further advantage of economy in expansion joint material; the hexagon is the figure nearest approaching the circle which can be grouped with other figures of the same shape, and the circle is naturally the most efficient slab shape by virtue of ultimate compactness; in other words, any or all sections through it are maximum sections, and isolated corners are eliminated; the hexagonal grouping of concrete pavement is not difficult to construct, approximately 70,000 square yards having been laid during this year under the personal direction of the applicant.

The preferred form of my invention is illustrated in the accompanying drawing, in which Figure 1 shows a top plan view of my road bed, and Figure 2 the result of a series of tests made with hexagonal road bed slabs and square slabs. While I have shown only the preferred form of the invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

Referring first to Figure 2, it will be noted that seven hexagonal slabs 1 and seven square slabs 2 are shown, both of which sets of slabs have been subjected to loads applied at opposite corners, the loads gradually increasing up to the breaking point. It appears that in all the hexagonal slabs fracture occurred substantially along a center line 3, while square slabs subjected to loads under similar conditions broke near the corners as shown at 4, and in practically all of the instances developed two breaks instead of one break, both breaks being along lines considerably shorter than those of the breaks in the hexagonal slabs.

The comparison of the weights required to effect the different breaks shows that it took considerably more weight to break the hexagonal slabs than it did to break the square slabs, the figures for the hexagonal slabs being 336, 248, 232, 280, 313, 280 and 265 pounds respectively, while the corresponding figures for the square slabs were 158, 150, 232, 216, 184, 232 and 216 pounds respectively, the average for the hexagonal group being substantially 279 pounds and that for the square group substantially 196 pounds.

In view of these experiments it seems that a road bed made of hexagonal slabs or panels would be far superior to a road bed made of square panels of the same thickness. My invention contemplates an arrangement such as shown in Figure 1, in which the panels 6 are of hexagonal form and preferably arranged in such a manner relative to the road bed as to present transverse joints 7 arranged in staggered relation with similar transverse joints 8, while zigzag joints 9 connect the transverse joints.

It will be seen that the angles between the joints are substantially 120 degrees, or one-third of a circle. Along the borders the transverse joints 11 are preferably allowed to extend clear to the edge, although this may call for a slab of unequal sides, as illustrated in the drawing.

A combined curb and gutter 12 may be arranged along the sides of the road bed.

I claim:

1. A concrete roadway comprising a plurality of individual slabs arranged in parallel longitudinal and oblique rows, the peripheries of said slabs having adjacent side portions disposed at an angle of 120° so that when the adjacent slabs of each row are arranged in approximate contact with one another and in approximate contact with the slabs of an adjacent row, angularly disposed portions of the slabs in each row will extend into the angular spaces pro-

vided by angularly disposed peripheral portions of adjacent slabs in an adjacent row, each of said slabs having a diagonal length not less than the transverse distance between the traction wheels of a road vehicle.

2. A concrete roadway having an intermediate portion comprising a plurality of individual slabs arranged in parallel rows, each of said slabs being hexagonal in contour and in approximate contact with oppositely disposed adjacent slabs, the marginal side portions of said roadway being made up of individual slabs, each of which is of fractional hexagonal contour and disposed with one of its corners interposed between adjacent corners of two adjacent hexagonal slabs in one of the adjacent intermediate rows, each of said hexagonal and fractional hexagonal slabs having an upper surface of not less than 120 square feet.

3. A concrete pavement slab of the character described defined by two edges of equal length arranged at an angle of 120 degrees, two edges joining the free ends of the first two edges at angles of 120 degrees and running parallel to one another and a fifth edge arranged at right angles to the latter two edges the longest dimension of said slab being not less than the transverse distance between oppositely disposed traction wheels of a road vehicle.

LEWIS A. PERRY.