Sept. 29, 1936. E. H. HOLMES 2,055,822

PAVING BLOCK

Filed Jan. 22, 1934 2 Sheets-Sheet 1

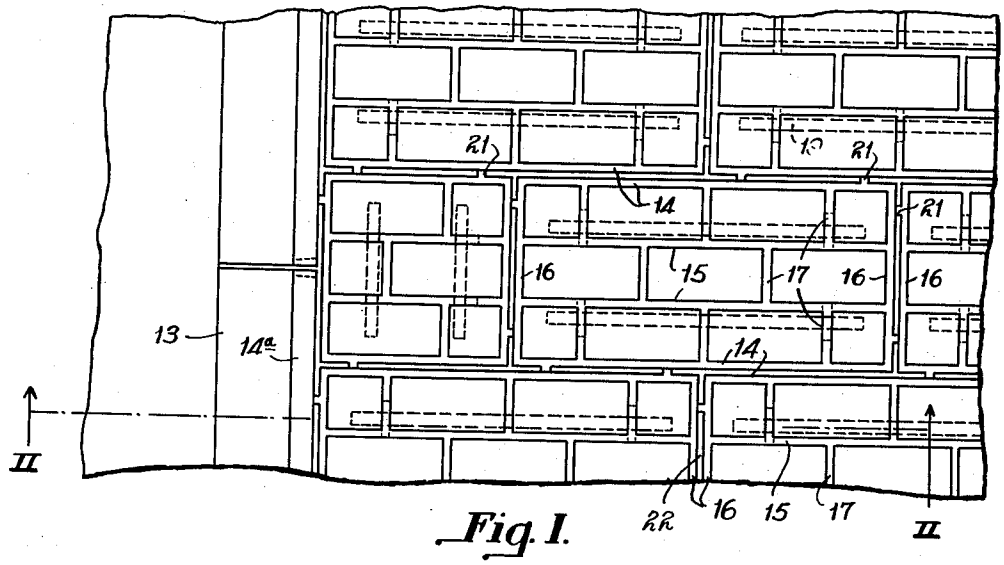


Fig. 1.

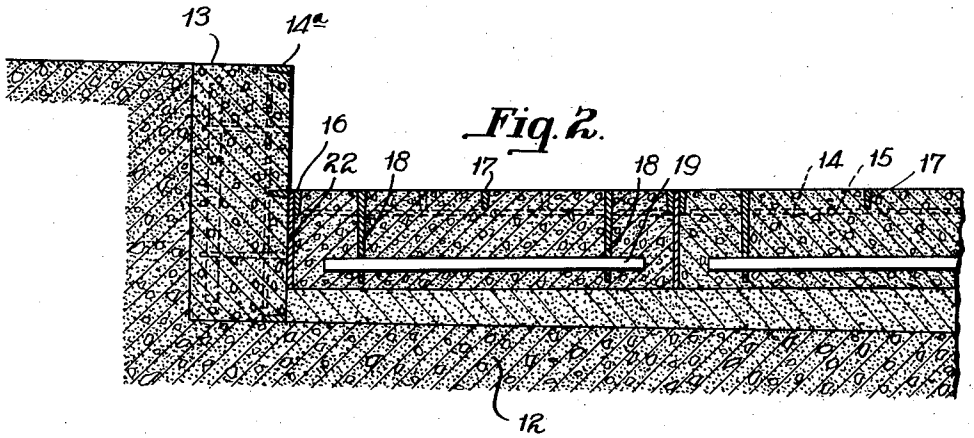


Fig. 2.

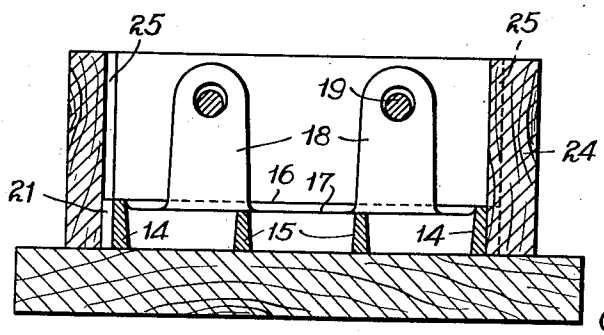


Fig. 3.

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Sept. 29, 1936. E. H. HOLMES 2,055,822

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Filed Jan. 22, 1934 2 Sheets-Sheet 2

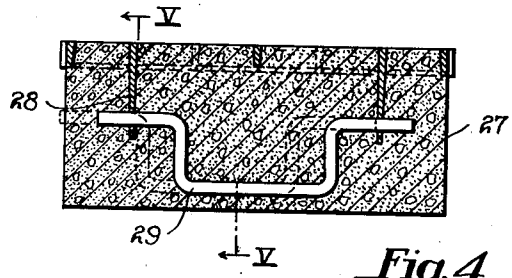


Fig. 4.

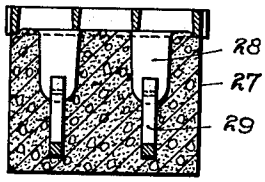


Fig. 5.

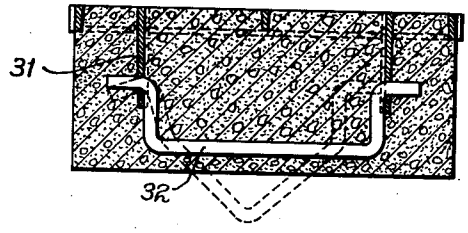


Fig. 6.

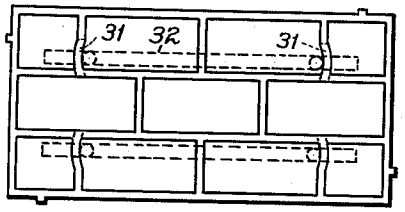


Fig. 7.

Fig. 8.

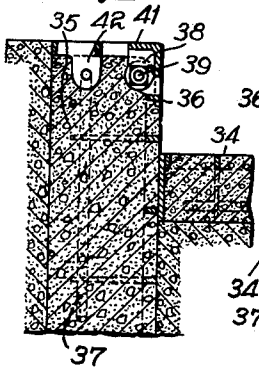


Fig. 9.

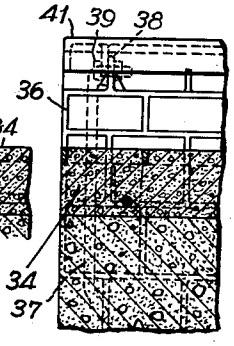
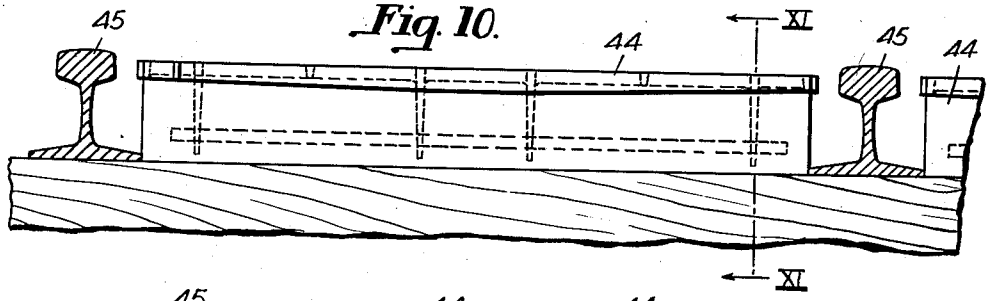


Fig. 10.



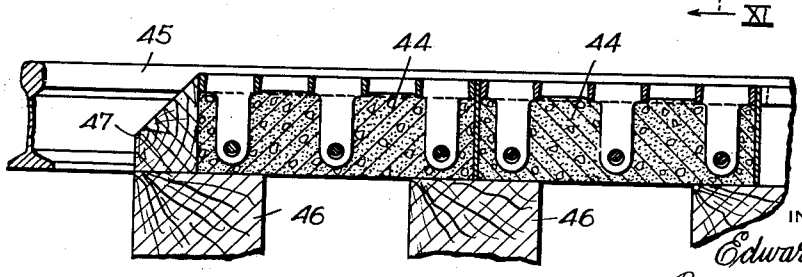


Fig. 11.

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PAVING BLOCK

Edward H. Holmes, McKees Rocks, Pa., assignor to Fort Pitt Malleable Iron Company, McKees Rocks, Pa., a corporation of Pennsylvania

Application January 22, 1934, Serial No. 707,757

2 Claims. (Cl. 94—12)

My invention relates to paving blocks and the like, such as those formed from concrete, asphaltic mixtures, or other materials which are shaped while in a plastic condition.

One object of my invention is to provide a reinforced paving structure which is of great strength and which will be more resistant to skidding than are ordinary concrete or asphalt surfaces.

Another object of my invention is to provide an improved method of making reinforced paving blocks.

In the accompanying drawings which are illustrative of various features of my invention, Figure 1 is a plan view of a portion of a pavement; Fig. 2 is a view taken on the line II—II of Fig. 1; Fig. 3 is a sectional view showing a mold box and the manner in which the reinforcing members are placed therein, preliminary to introducing the plastic concrete; Fig. 4 is a sectional view of a modified form of paving block; Fig. 5 is a view taken on the line V—V of Fig. 4; Fig. 6 shows still another modification; Fig. 7 is a plan view of the block of Fig. 6; Fig. 8 is a cross-sectional view of a curb slab or block in a different form than that shown in Fig. 2; Fig. 9 is a face view thereof; Fig. 10 is a view showing the manner in which blocks or slabs may be utilized where the highway crosses a railroad track, and Fig. 11 is a view taken on the line XI—XI of Fig. 10.

Referring first to Figs. 1 and 2, I show a portion of a pavement formed of reinforced blocks which are assembled on a road bed 12, and also curb guards 13.

Each paving block includes a grid having marginal bar-like side portions 14 and intermediate longitudinally-extending bar-like portions 15, together with end bars 16 and intermediate cross bars 17. Each grid is provided with depending legs 18 that constitute extensions of certain of the bars 17 and are perforated for the reception of reinforcing rods 19, the legs 18 being of such length that the bars 19 will be located adjacent to the lowermost face of the block. The grid, including its legs 18, is preferably in the form of a single steel casting, though it may be formed of separate metallic parts which can be assembled in any suitable manner. The marginal edges of each grid is provided with projections 21 that serve as spacing elements to permit of pouring or otherwise inserting asphalt or other expansion joint material 22, between the adjacent edges of the assembled blocks and prevent such material working up to the surface of and from between the edges of the blocks.

The curb blocks 13 may be substantial duplicates of the other paving blocks, but are placed in edgewise position on the road bed, so that the grids will be exposed to contact with vehicle wheels and the upper longitudinal bars 14a be in position to protect the upper corners of the concrete.

While the grids and other reinforcing members may be made in any convenient size, and placed in position on a roadway for receiving poured concrete, I prefer to make the grids of relatively small dimension to correspond somewhat to the sizes of paving blocks frequently employed, and to cast the concrete around the reinforcing material to form blocks which are then placed on the road bed. To this end, I show a mold box 24 in the sides of which vertical slots 25 are formed for receiving the tongue-like stops 21 of the grid.

The grid is placed in the mold box in inverted position and with the rods 19 in place in the legs 18. The concrete or other paving material is then poured or dumped into the mold, and the mold vibrated to effect settling and compacting of the concrete to thoroughly imbed the metallic members and to give it a smooth finish on the mold bottom. After the concrete has set sufficiently, the block thus formed may be removed from the mold and dried. It is then ready to be built into a pavement.

In the completed block, the concrete is approximately flush with the upper exposed surface of the grid, though it may shrink down during drying and will in time, of course, become worn away slightly. When the grid bars are in a slightly higher plane than the concrete surface, they will function to resist skidding of vehicle wheels.

In Figs. 4 and 5, I show a concrete block 27 having a grid which may be of substantially the same form as the grid of Figs. 1 to 3. The concrete, however, is of much greater thickness relative to the depth of the grids and their legs 28.

It is important that the reinforcement of the blocks extend to a plane near the lower side thereof, and to this end, I provide reinforcing bars 29 which are bent downwardly at their mid portions. While a similar reinforcing arrangement could be secured by lengthening the legs 28 and using straight rods, the arrangement shown permits a certain size of grids to be employed for blocks of various thicknesses.

The holes through the legs 28 are of non-circular form in cross section, and the cross-sectional form of the reinforcing rods is of similar shape, so that when the grid and the rods are placed

in a mold as shown in Fig. 3, the reinforcing rods will not turn in the legs, but will be held with their bowed portions in upright position. In inserting the rods **29** in the legs **28**, one end of the rod is first inserted in a leg **28** as indicated by dotted lines in Fig. 4, whereupon the rod is slid toward the right, so that its other end may enter the other leg **28**, and thus bring it to the position shown in full lines in Fig. 4.

Referring now to Figs. 6 and 7, I show another means for securing the advantages of the structure of Fig. 4. In this arrangement, the holes through the legs **31** may be either circular or non-circular, but the legs themselves are curved about their vertical axes. The reinforcing rods **32** are initially formed as indicated by dotted lines in Fig. 6. The intermediate bowed portion can then be struck with a hammer to cause the ends of the rods to enter the holes through the legs **31**, and to bring it to its full-line position as shown in Fig. 6. In some instances, this arrangement will be preferable to the structure of Fig. 4, because a larger portion of the rod **32** is imbedded near the lower side of the block.

The curving of the legs **31** about their vertical axes prevents the rod **32** from tilting when it is placed in the mold **24**, preparatory to casting or molding the block, since the vertical portions of the rod lie within the depressed surfaces at the inner sides of the legs **31**.

In Figs. 8 and 9, I show paving blocks **34**, which may be of the form shown in Figs. 1 and 2, or of any other suitable form, with which curb blocks **35** are provided, and these blocks have grids **36** and reinforcing rods **37**. The grid **36** differs from the grids of Figs. 1 and 2, primarily in the provision of wings **38** through which bolts **39** extend for supporting a top grid **41** which is engaged by the bolts **39**. The upper ends of the rods **37** are bent laterally and extend through wing portions **42** of the upper grid, and assist in holding the upper grid in place.

In Figs. 10 and 11, I show a structure which is especially suitable for use at railroad crossings. The blocks or slabs **44** may be formed in substantially the same manner as the blocks **1** to **3**, but are preferably of sufficient length to extend the distance between the bases of the track rails **45**, a sufficient number of slabs being placed side by side to provide a roadway of desired width. The slabs can be conveniently supported on the railroad cross ties **46**, and beveled bars **47** can be placed at the edges of the roadway to prevent the slabs from being torn out of place by dragging of brake rigging or the like.

It will be seen that the grid bars of the blocks are of great depth relative to their width. They thus have adequate resistance to vertical loads which are, of course, greater than the horizontal stresses imposed thereon. The interposed concrete braces the bars against distortion in horizontal directions. By these means I can, by the use of a minimum amount of metal, secure reinforcement that is of adequate strength and of great durability.

I claim as my invention:—

1. A paving block comprising a single mass of concrete or the like having a grid partially imbedded in but exposed on the wearing face thereof, the grid having legs extending into the block to points adjacent to the opposite face thereof, and positioned at points removed from the edges of the block, and a reinforcing bar carried by said legs and having its major portion completely imbedded in the block adjacent to the opposite face of the block.

2. A paving block comprising a single mass of concrete or the like having a grid partially imbedded in but exposed on the wearing face thereof, legs carried by the grid and extending toward the opposite face of the block, and separately-formed reinforcing bars carried by said legs, each bar being carried by a pair of legs, and that portion of the bar between the legs being bowed beyond the legs, to a plane adjacent to the opposite face of the block but entirely imbedded in the block.

EDWARD H. HOLMES.