June 4, 1929. C. J. M. LANCETTE 1,715,766

METHOD OF COVERING ROADS WITH REENFORCED CONCRETE

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Fig.1.

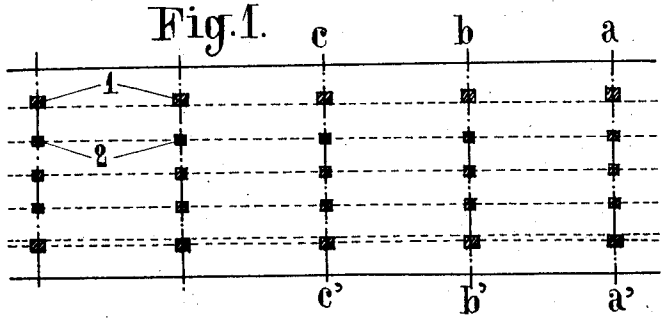


Fig.2.

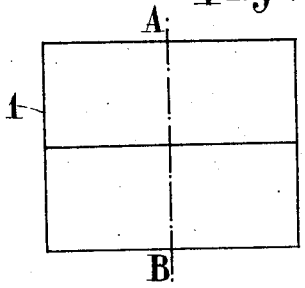


Fig.3.

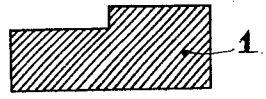


Fig.5.

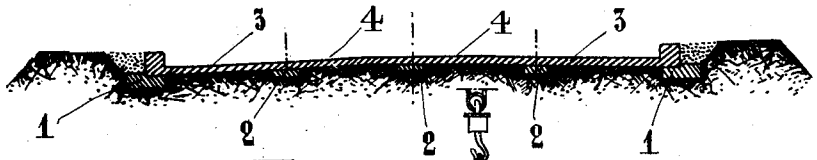


Fig.4.

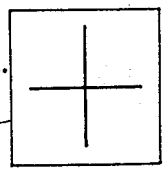
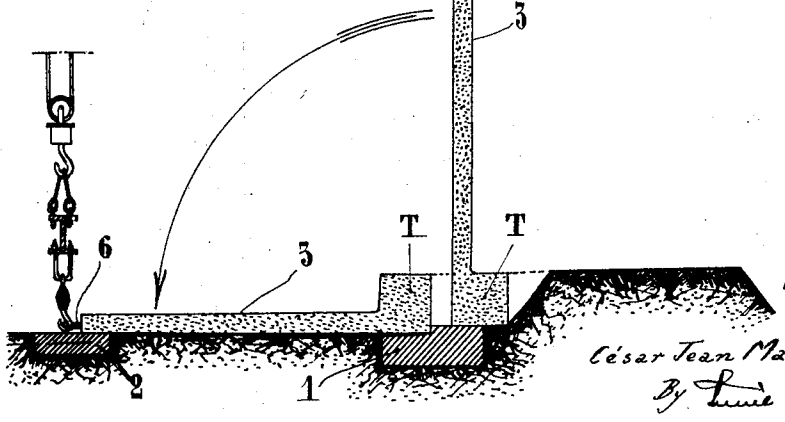


Fig.6.



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METHOD OF COVERING ROADS WITH REENFORCED CONCRETE

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Fig.7.

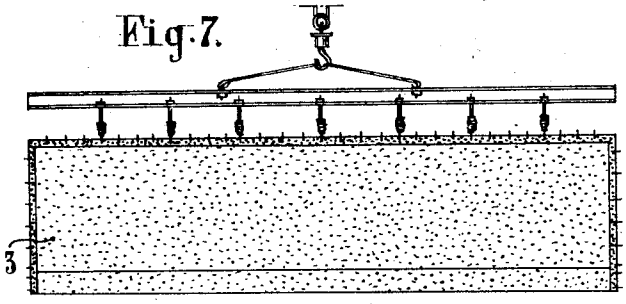


Fig.9.

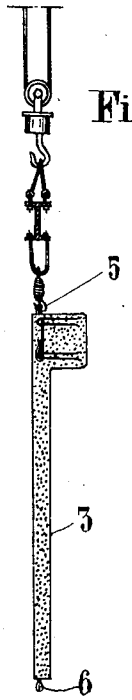


Fig.10.

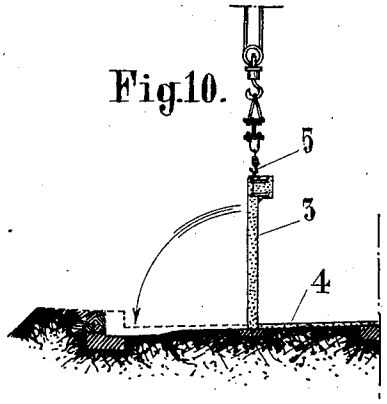


Fig.8.

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METHOD OF COVERING ROADS WITH REENFORCED CONCRETE

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Fig. 11.

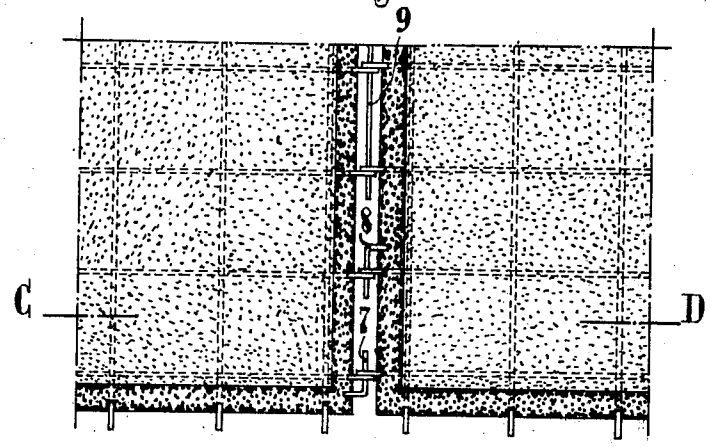
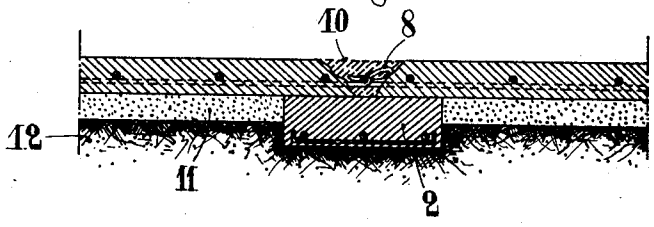


Fig. 13.



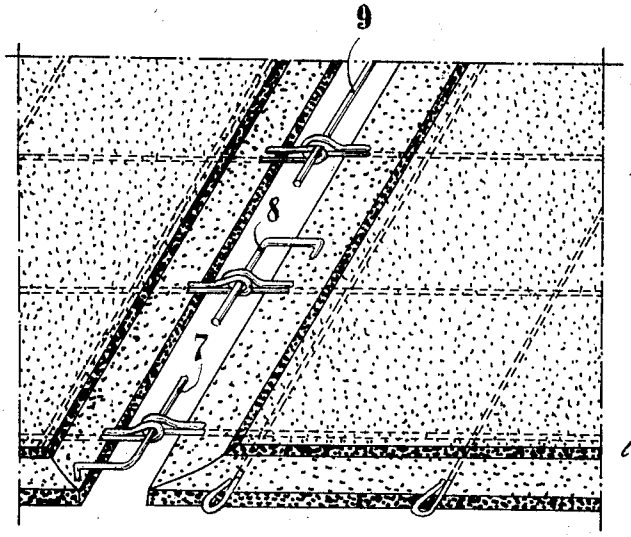


Fig. 12.

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Patented June 4, 1929. 1,715,766

UNITED STATES PATENT OFFICE.

CÉSAR JEAN MARIE LANCETTE, OF PARIS, FRANCE.

METHOD OF COVERING ROADS WITH REENFORCED CONCRETE.

Application filed February 14, 1924, Serial No. 692,819, and in France November 14, 1923.

This invention relates to a method of covering roads with reenforced concrete, by using elements moulded beforehand and put in place and assembled in situ in accordance with the following description.

In order to make the description clearer, a practical method of carrying out the invention is illustrated by way of example in the accompanying drawings.

Figure 1 shows diagrammatically a stretch of road prepared for the laying down of the previously moulded elements.

Figure 2 shows one of the concrete blocks used in such preparation.

Figure 3 is a section on the line A—B of Figure 2.

Figure 4 shows another of these blocks.

Figure 5 is a cross-section of the road, the covering of which has been carried out in accordance with the present invention.

Figures 6–10 are detail views showing the putting in place of the various elements on the road previously prepared by means of the blocks shown in Figures 2–4.

Figure 11 is a plan showing the method of assembling together two consecutive elements by means of pins passing through the projecting parts of their reenforcing rods.

Figure 12 is a corresponding perspective view, and

Figure 13 is a section on the line C—D of Figure 11.

The elements utilized for the covering according to the invention are made of reenforced concrete moulded in advance at the works, in the form of large slabs, with or without ribs according to the strength to be obtained. These slabs are moulded by pouring cement on a fabric of round steel rods for instance, of suitable dimensions according to the strength desired. This moulding is done in the same way and in the same conditions as in the manufacture of building elements described in my prior U. S. Patent No. 1,456,806 granted May 29, 1923.

The concrete is spread and rammed in the moulds by power or by hand; and in the visible face intended to constitute the upper surface of the road, is incorporated carborundum or other suitable hard substance, the operation being completed by smoothing the said face.

Certain portions of the reenforcement project from the sides of the slabs and are made in the form of eyes and hooks so that the assembling together of the various slabs may be done when they are put in place.

The preliminary preparation of the road is carried out in the following manner: The road bed, either excavated or banked up, is first rolled so as to obtain the desired reaction of the ground (for instance 0,5 to 3 kg. per square centimeter).

At the axis of intersection of the various slabs which are to form the covering, are then placed reenforced concrete blocks 1 and 2 (see Figure 1) which are intended to be used both as marks for laying the slabs, and as foundations for the said slabs.

These blocks are of two kinds. The blocks 1 which are laid at the edges of the road and intended to receive the lateral slabs of the covering, have the shape shown in Figures 2 and 3. The blocks 2 which are placed in the middle of the road, at the junction of the various slabs, are simply flat and smaller (Figure 4).

These various blocks are laid in the ground 12 as indicated in Figure 13, and a layer of earth aggregate or sand 11 is thereupon placed between them so that the level of the said layer shall project to a certain amount (five millimeters or less) above the upper level of the blocks which are intended to form marks and to be used for levelling the subsoil for the laying of the covering slabs and also to support the latter while they are being tipped or turned over during laying as will be hereinafter explained.

The road having been thus prepared, the laying down of the slabs which have been brought to the roadside, is proceeded with. These slabs are of two kinds. In fact for covering the width of the stretch of the road comprised say between the lines a—a' and b—b' (Figure 1) two lateral slabs 3 are utilized between which are placed a number of intermediate slabs 4 (to the number of two in the example illustrated).

The slabs 3 are provided, as shown in Figures 6, 8 and 9, with a kind of heel T intended to form the gutter of the road; the slabs 4 are simple flat slabs or flags (Figure 8).

First of all, one of the slabs 3 is placed at the edge of the road. The said slab, being held by means of a hoisting apparatus (in view of its weight which may be 1200 to 1800 kg.), equipped with a swinging bar provided with spring-controlled hooks which engage

with the eyes 6 projecting from the reenforcements embedded in the slab, rests vertically on the plates 1.

By manipulating the hoisting apparatus, the said slab will be tipped or turned down (Figure 6) so as to bring it into its final position 3′ in which it rests, as will be seen, on the blocks 1 and 2, its heel T engaging with the offset of each block 1.

The first slab 3 having been put in place, the next slab 4 is laid in a similar manner, the said slab being supported by the swinging bar of the hoisting apparatus, and is connected, by means of pins passing through the projecting eyes 6, to the slab 3 already laid. The slab 4 is tipped into the position 4′ as shown in Figure 8.

The various successive slabs 4 are laid down in the same manner, then the other edge or end slab 3 is laid in the manner shown in Figure 10. For that purpose its heel is provided with the projecting fittings 5, by means of which it can be hooked (Figure 9).

The covering of the strip *a*—*a*′, *b*—*b*′ having been completed, the same will be done for the next strip *b*—*b*′, *c*—*c*′, and so on, the various slabs being connected to each other by means of pins passing through their projecting fittings.

The connecting together of the projecting portions of the reenforcements of the slabs is effected by means of pins in the manner set forth in my prior patent already referred to, but it will be preferably made by means of bent pins of round iron each engaging either with a single pair of eyes, or with two pairs of eyes (see Figures 11–13). In the said figures, the pins engaging with only one pair of eyes are marked 7 and 8, and those engaging with two pairs are marked 9.

These pins are cranked or bent as already stated, and the bent portion of each pin, with its end bent again to form a stop, is turned to the side as shown in Figures 11 and 12, after the pins have been introduced.

The covering is then completed by connecting and sealing together all these various slabs, the sealing being effected by pouring concrete 10 between the joints which fills the projecting hooking portions of the reenforcements.

It is advisable to provide at intervals (for instance about every 35 meters) an expansion joint extending throughout the whole width of the road, the said joint being about 0,02 to 0,03 m. wide. The slabs at the said joint are stopped by an iron bar having its edge level with the upper surface of the slabs, said bar being fixed during the moulding in the thickness of the slabs by means of sealed lugs.

This joint is thereupon filled up by pouring in a molten mixture of asphalt and pitch or other similar substances.

Obviously, the described method of carrying out the invention has been given by way of example and any constructive modification may be made without departing from the invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A method of paving roads with large, elongated rectangular paving slabs, comprising the steps of embedding concrete supporting blocks in the surface of the road bed at such points as to underlie adjacent slabs, when the same are laid, exclusively at their meeting corners; laying the slabs side by side lengthwise of the road so as to rest at their said corners directly on said blocks while producing relatively-wide joints between the contiguous edges of the slabs for the entire length of the latter, said joints extending uninterruptedly around the slabs; and continuously sealing such joints by pouring concrete thereinto, whereby the concrete, on setting, will form a continuous network of interconnected longitudinal and transverse ribs or beams of substantial width and of the same height as the slabs united with said slabs to form a monolithic structure.

2. A roadway, having a monolithic concrete pavement comprising large, elongated rectangular paving slabs laid side by side lengthwise of the road with their edges contiguous so as to produce relatively-wide joints between said edges for the entire height of the slabs, said joints extending uninterruptedly around the slabs; concrete supporting blocks embedded in the surface of the road bed at such points so as to underlie adjacent slabs exclusively at their meeting corners and whereon the same directly rest; and a grouting of concrete filling said joints and constituting a continuous network of interconnected longitudinal and transverse ribs or beams of substantial width and of the same height as the slabs united with said slabs.

In testimony whereof I affix my signature.

CÉSAR JEAN MARIE LANCETTE.