Jan. 18, 1938. A. HOLTER 2,106,117

METHOD FOR MAKING CONCRETE ROADS

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Fig. 1.

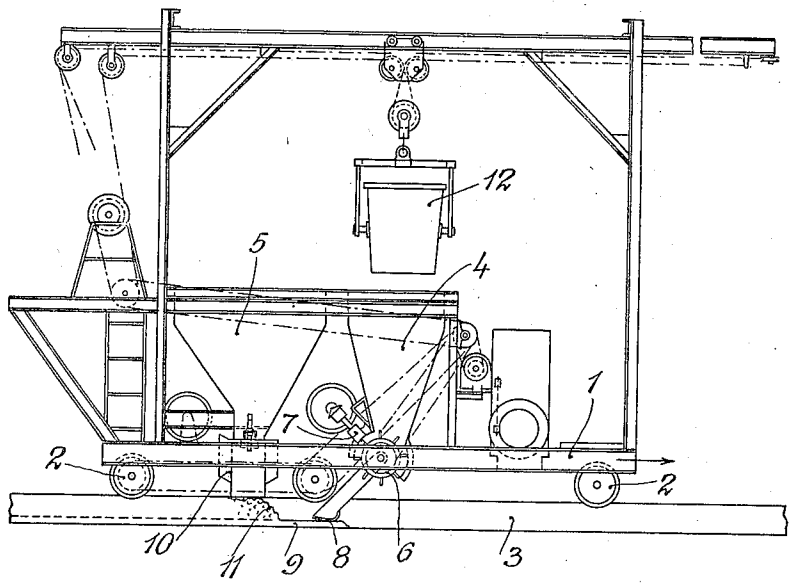
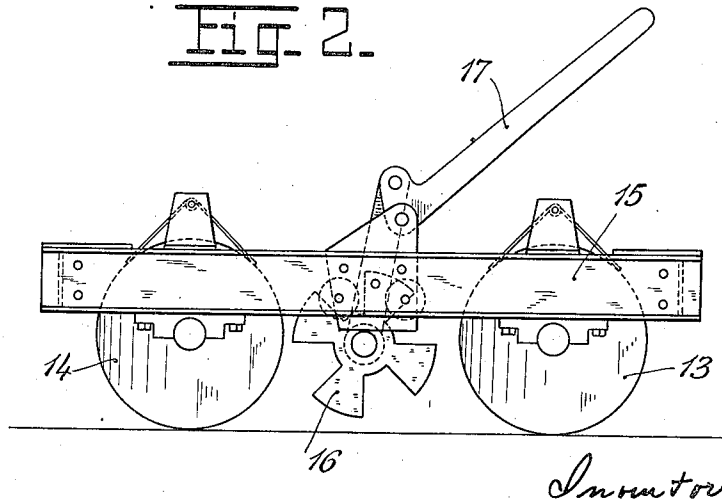


Fig. 2.



Inventor:
Alfred Holter
By E. F. Hendroth
Atty

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METHOD FOR MAKING CONCRETE ROADS

Alfred Holter, Abbediengen, near Oslo, Norway

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1 Claim. (Cl. 94—22)

The present invention relates to an improved method for making concrete roads and also includes machinery particularly adapted for carrying out the method in its preferred form.

In accordance with known methods of concrete road making the various ingredients of the concrete, which is to form the road surface, i. e. cement, sand, water and stones of suitable size, after having been placed on the road either as a mixture or in separate layers, are subjected to tamping by hand or by machine respectively the treatment of heavy rollers during a period terminating before the mass has obtained its initial set. In cases where the cement-sand mixture and the stones which are to form the road surface are placed on the road in separate layers ("sandwich" method) it is customary to have one layer of cement grout interposed between a lower and and upper layer of stones.

The purpose of the present invention is to provide an improved method of concrete road surface making, by which it is obtained that the hardening of the concrete surface is effected more quickly.

Another purpose of the invention is to provide a method for making concrete road surfaces by means of which it is obtained that the top surface of the concrete road will consist mostly of stone embedded in mortar, and thus will have a comparatively high resistance against wear, and also provide a rough surface, on which dangerous skidding is less likely to take place. On the other hand, the bottom surface of the slab—in accordance with the present method—will be comparatively smooth, so as to give the slab freedom to move on the road, owing to expansion and contraction at various temperatures.

It has been found, that a considerable reduction of the necessary hardening period of the concrete road surface may be obtained by exposing the concrete and stone mixture placed on the road to the action of light rollers during a period extending beyond the initial setting time and continuing over part of or the whole period of setting. Such rolling, especially when in accordance with a preferred embodiment of the invention it is combined with harrowing, tends to lengthen the period of initial setting, and has also the effect of reducing the period of hardening, so that a concrete road, when made in accordance with the present method, may be able to carry traffic 24 to 48 hours after the laying of the concrete, against 8 to 14 days for concrete roads made in accordance with the known methods.

It is preferred in accordance with the present invention to place the ingredients of the concrete forming the road surface in two different layers, the cement mortar being first laid down in a separate layer, and a layer of stones of suitable size being placed on top of the first mentioned layer.

The two layers are then thoroughly mixed by means of harrowing and rolling, the rolling being continued beyond the initial setting time and extending over part of the period of final setting.

In this manner it is obtained that the upper surface of the concrete road will mostly comprise stones embedded in mortar, making the top surface rough and highly resistant, whereas the bottom surface is comparatively smooth and permits the slab to expand and contract owing to varying temperatures.

The method in accordance with the present invention may be carried out by means of machinery comprising a truck adapted to move on suitable rails laid down on the road and being provided with hoppers extending between the rails and having outlet slots for feeding mortar and stones respectively to the road surface. Further, the invention comprises a combined rolling and harrowing device for treating the road after the layers of cement grout and stones have been placed thereon.

On the drawing Figure 1 is a diagrammatic longitudinal section of the truck for placing the layer of cement grout and stones, and Figure 2 is a diagrammatical side view of the combined rolling and harrowing device.

The machine in accordance with Figure 1 comprises a carriage or frame work 1 provided with wheels 2 adapted to roll on rails or beams 3, which serve at the same time to restrict the sidewards flow of concrete grout. The frame work or carriage 1 is provided with two vessels or hoppers 4, 5 adapted to contain cement mixture and stone respectively and provided with outlet slots extending between the rails or beams 3. The vessel or hopper 4 containing cement mixture is provided with a mechanically driven feeding device 6, comprising a rotating drum provided with radial ribs and co-operating with an adjustable vein or wall section 7, by means of which the amount of cement mixture let out through the bottom slot may be regulated. Immediately behind the vessel 4 there is located a planer or scraper 8 extending transversely between the beams 3 and serving to secure a constant thickness of the layer 9 of cement mixture.

The second hopper 5 contains stones of suitable size and is provided with a vertically adjustable outlet spout 10, the lower edge of which deter-

mines the thickness of the stone layer 11. This machine, as indicated on the drawing, may also be provided with suitable charging device 12 for supplying cement mixture and stone to the vessels 4 and 5.

The combined rolling and harrowing device illustrated on Fig. 2 comprises two rollers 13, 14 hinged together by a frame work 15. Between said rollers there is mounted a harrow 16, which also may be separately rotated by a suitable transmission (not shown) from the rollers 13 or 14 and which is adapted to be raised or lowered by means of bell crank lever 17.

Although the method in accordance with the present invention has here been described in connection with concrete road surfaces without reinforcement, it will be understood, that the method can also be utilized with re-inforced concrete roads, the re-inforcement irons being then placed on the ground or on a layer of sand covering the ground before the cement or concrete mixture is laid.

I claim:

A method for making concrete road surfaces which comprises placing a layer of cement mortar on the road, placing a layer of stones of suitable size on top of said first named layer, mixing said layers by harrowing and exposing the mixture to the treatment of light rollers during a period extending beyond the initial setting time and over at least part of the period of final setting.

ALFRED HOLTER.