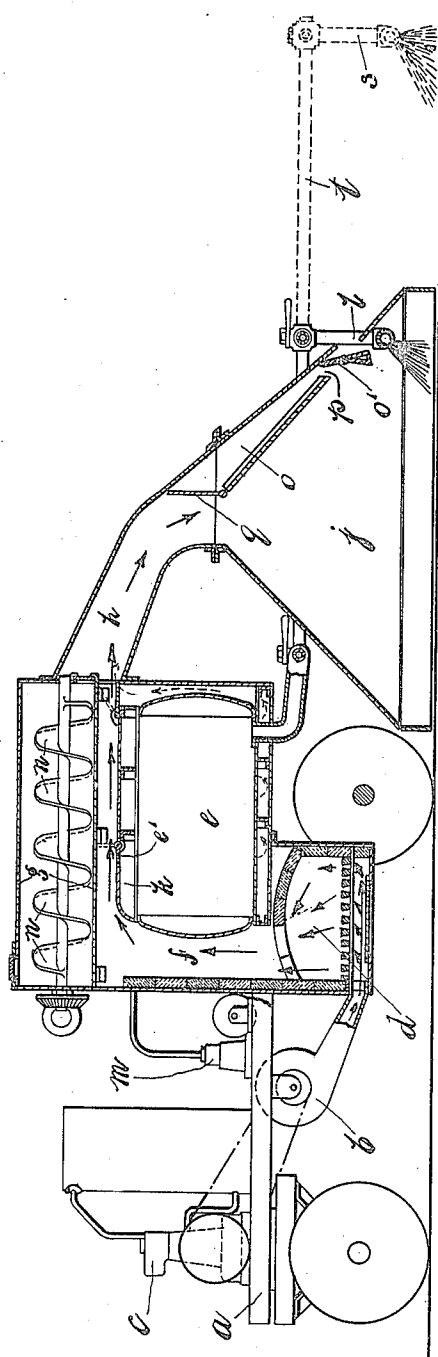


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MANUFACTURE OF ROADS AND LIKE SURFACES.
APPLICATION FILED DEC. 23, 1916.

1,247,271.

Patented Nov. 20, 1917.



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MANUFACTURE OF ROADS AND LIKE SURFACES.

1,247,271.

Specification of Letters Patent.

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Application filed December 23, 1916. Serial No. 138,540.

To all whom it may concern:

Be it known that I, JOHN HINES, subject of the King of Great Britain, residing at 289^a Finchley road, London, N. W., England, engineer, have invented certain new and useful Improvements in the Manufacture of Roads and like Surfaces, of which the following is a specification.

This invention comprises an improved manufacture of roads and like surfaces. It is well known to apply a flush carpet compounded of such materials as broken stone or slag with a bituminous binder and filling material upon road surfaces to form a hard bound durable dustless road surface. It is also well known to scarify a road surface to some extent and to apply a bituminous binder and filler to grout an existing road applying more metal until a desired depth of treated material is obtained. This grouting or penetration method generally required proceeding in successive stages or layers to insure the requisite depth of penetration of the bitumen. These known methods of manufacture can only be carried out successfully in fine dry warm weather as the material of the road and the applied materials must not be only quite free from moisture but must be heated to insure good results, and as under normal conditions such material after being once wet, retains the moisture for a long time, long delays occur entailing loss through cost of labor etc. It has been proposed with the object of avoiding these delays to dry and heat portions of road surface by forcing heated air on to the same beneath a hood so as to prepare for the making or repairing operations.

The full benefits of this method have not hitherto been reaped owing to the subsequent exposure of the heated and dried surface for the carrying out of the later operations, and in this heated and dried state cold air and moisture if present are at once absorbed, and the desired penetration of the binding material and filler is not obtained.

Flush carpeting and grouting and like methods depend for their success upon the penetration of the binder into the existing surface so that the new and the old marry together and any subsequent movement of the one upon the other causing wave formation under rolling or traffic is avoided.

My invention comprises an improved manufacture in which the road is heated and dried by a current of air or hot gases in a

suitable inclosure or hood and the heated binder and sand or other filler are delivered into the heated and dried road in the zone of heat or before exposure of the same to the atmosphere. The absorbent properties of the heated and dried surface during cooling are thus fully utilized to effect the desired penetration of the binding materials.

The manufacture is preferably carried out by using pressure to force the heated binding material bitumen, asphalt, tar, etc., into the heated road and the filler is also preferably distributed by a current of air or hot gases forming a hot blast.

A preferable form of apparatus for the purpose of carrying out the manufacture is set forth in my copending application, Serial Number 138,541, filed Dec. 23, 1916 but any suitable apparatus in which the heated binder and filling materials may be distributed on the heated road surface within the inclosure or hood used for the heating operation or immediately behind same may be employed.

In the appended drawing which is a sectional view of the preferred apparatus above referred to *a* is a suitable running frame, *b* a blower, *c* a suitable engine or motor, and *d* a furnace or air heater. The running frame may be adapted for propulsion or for trailing and any convenient arrangement for driving the blower or fan may be followed. Adjacent to the furnace or air heater is a tank *e* for the bitumen or like binding material with the main air or gas trunk *f* carried over or through the tank *e* and preferably along between that tank and a bin *g* for sand or like other finely divided filling material. The air or gas trunk *f* passes along to the rear end of the tank *e* where an outlet pipe *h* is provided leading to a hood *j* of conical or rectangular form. Preferably the hood is of square pyramidal form and the main enters at the vertex and preferably deflectors are arranged within the entrance to distribute the heated air or gas equally within the hood.

A by passage *k* for the air or gases may be arranged leading around the tank with dampers *e'* in the main *f* so that the whole or part only of the gases may be sent around the tank. Any other arrangement of flues for circulating heat around the tank may be followed but preferably means will be provided in any case for insuring all the

heat passing along the main trunk *f* when desired to the hood so as to insure sufficient for the purpose of drying and heating the road.

- 5 A pipe from the tank *e* leads to a spraying or distributing pipe *l* which may if desired, be provided with spraying nozzles of any suitable construction. A pressure pump *m* may be employed to force air above the
10 bitumen, asphalt, tar, or any other binder within the tank *e* to force the heated liquid to the sprayers to insure its atomization or fine division and to facilitate its penetration into the road. Any other means for
15 forcing the liquid may be employed.

- For the "filler" which may comprise sand, chippings, clinker dust, Portland cement, or the like, feeding screws such as *n* Fig. 4, or any other conveying means, may
20 be employed in the bin *g* and the filler may be discharged into the outlet *h* and in the illustrated arrangement it enters a receptacle *o* on the hood *j* and is blown by the heated air or gas through the slot *p* into
25 the hood near the liquid discharge. A deflecting valve *q* is shown for closing the normal entrance to the hood so as to deflect the filler and the current of heated air or gas into the receptacle *o*, see Fig. 5. The
30 screws *n* in the sand bin *g* may be driven from the road wheels or by hand or power as desired. The bottom of the receptacle *o* down which the sand, etc., will fall in its discharge may be curved transversely or
35 provided with radiating ridges or grooves or any like means for facilitating even distribution of finely divided materials may be employed. A deflector *o*¹ may be em-

ployed so that the filler may be discharged within or outside the hood as devised. 40

It is desirable to provide flues or linings so that the heated air or gases may be utilized when desired entirely for heating the binding agent and the filler for example when the machine is not at work. 45

Beyond the hood *j* a second sprayer pipe *s* Fig. 2 may be carried by an extension *t* so that a second coat of the binder may be given to a treated surface as the hood is drawn forwardly for further operation. 50

It will be understood that the invention is not limited to the above construction which is given as an example only.

I claim:

1. The method of treating roadways and 55 similar surfaces which consists in first heating and drying the surface to be treated by the use of a hot-blast, protecting the heated and dried surface from exposure to the atmosphere, then delivering upon such surface while so protected a heated, plastic binder, and finally allowing the surface to cool. 60

2. In constructing roadways and the like by grouting, flush carpeting and similar operations, the method of treating the surface which consists of first heating and drying the same by the use of a confined hot-blast, protecting the heated and dried surface from exposure to the atmosphere, then delivering upon and into such surface while so protected a heated binder and filler, and finally allowing the surface to cool. 70

In testimony whereof I affix my signature.

JOHN HINES.