

E. M. CHADBOURNE.
CONCRETE ROADWAY.
APPLICATION FILED JULY 19, 1910.

982,247.

Patented Jan. 24, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

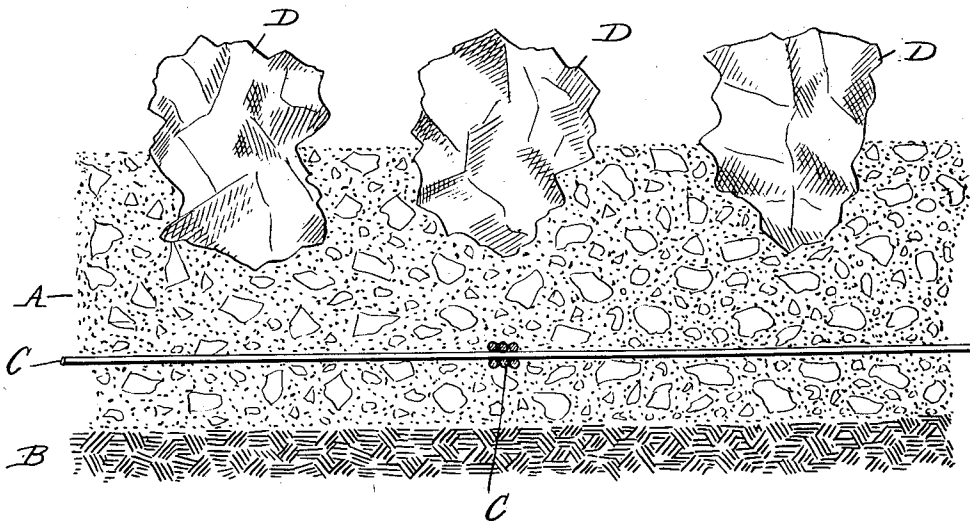
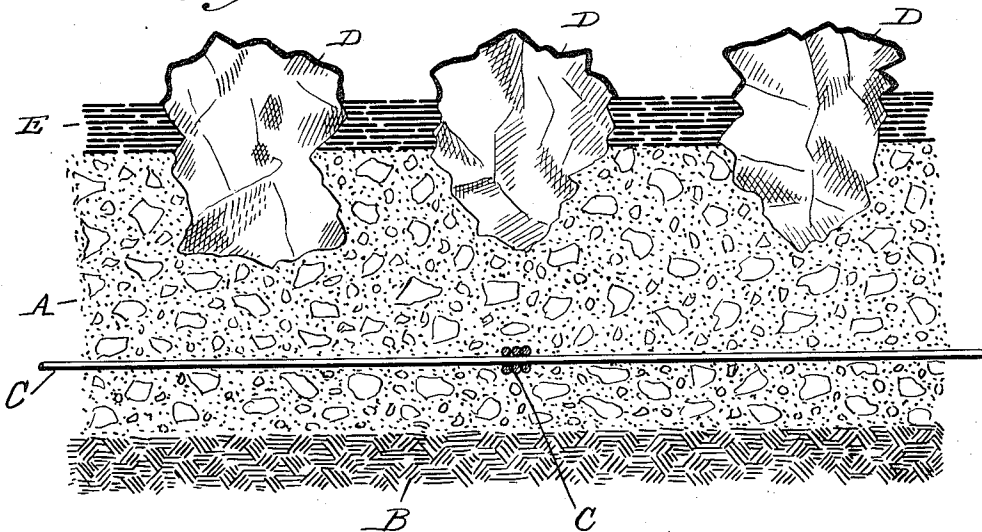


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

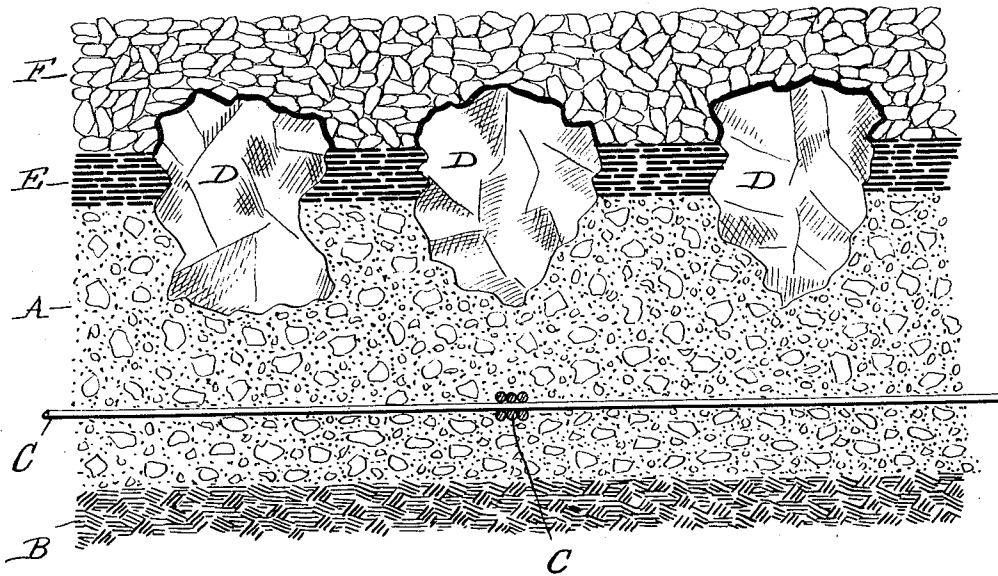
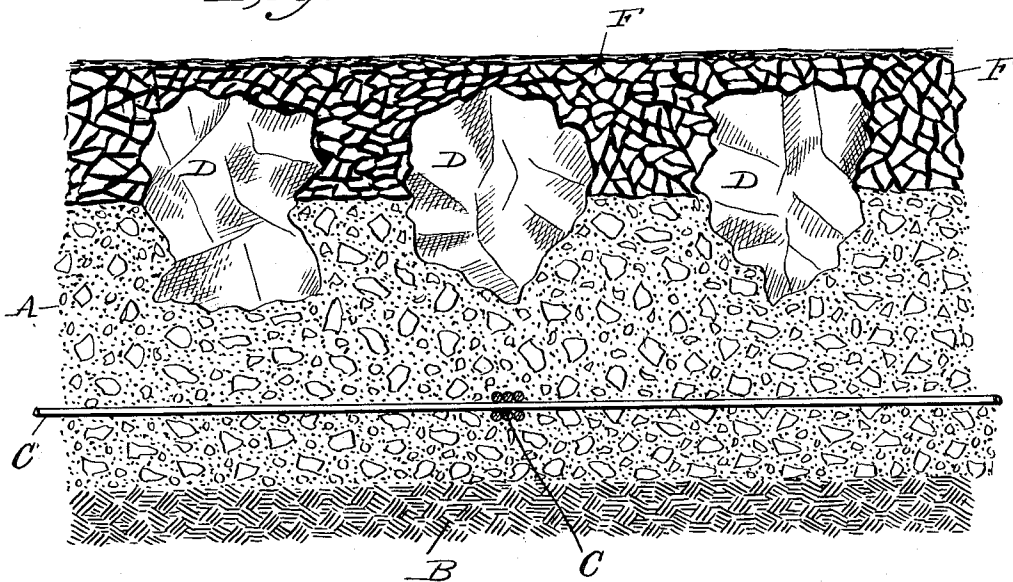


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CONCRETE ROADWAY.

982,247.

Specification of Letters Patent. Patented Jan. 24, 1911.

Application filed July 19, 1910. Serial No. 572,728.

To all whom it may concern:

Be it known that I, EDWARD M. CHADBOURNE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a certain new and useful Improvement in Concrete Roadways; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to the construction of paving for roadways, streets, walks, etc., embodying a suitable foundation for supporting and distributing the load and a surfacing or top layer of wear resistant material or composition.

Objects of the invention are to provide a paving which will be dustless and have a well bonded waterproof surface of such character as to afford great resistance to wear under all conditions of traffic without being slippery when wet.

Further objects of the invention are to reduce the cost of paving having the desirable qualities mentioned and to provide for its construction and the combining of the ingredients at the place where the paving is laid, thereby avoiding the necessity of preliminary mixing and preparation in plants at fixed points and subsequent transportation of the mixed ingredients to the place of use.

In accordance with the present invention a suitable foundation, such for instance as a reinforced concrete foundation is laid on a suitable sub-grade, said foundation being preferably substantially impervious to oils found in asphaltic binders now in common use or of the character hereinafter referred to. The asphaltic binder employed is preferably a heavy asphaltic oil which is practically non-fluid at normal temperatures but liquefies when heated to a temperature of 175° or over. This asphaltic binder is heated and poured or is spread directly on the surface of the base and retained thereon preferably by suitable surrounding walls such as would be formed by pockets in the surface of the foundation or by forms of wood, iron, cardboard, etc., placed on the top of the foundation.

Over the binder there is placed a layer of clean dry rock screenings which are arti-

ficially heated so as to cause the binder to unite or bond therewith and the whole is then rolled or compressed forcing the screenings downwardly and the asphaltic binder upwardly to fill the voids in the screenings. The screenings being hot the binder will thoroughly coat the same and form a bond therewith which is insoluble and unaffected by atmospheric or weather conditions.

In practical paving operations the screenings are preferably heated *in situ* by a portable burner arranged to shoot a flame down into the same thereby thoroughly heating the same and also liquefying the heavy asphaltic binder. While the screenings are still hot and the binder in a liquid state the mass is compressed by rolling, thereby forcing the screenings down and the binder upwardly so as to fill the voids and form a wearing layer having superior wear resisting qualities, and a surface best calculated to afford perfect traction without tendency to disintegrate or break down in use or because of atmospheric or climatic conditions.

The heater or burner employed may be of any of the kinds employed for heating asphalt roadways in repair work as now practiced, although I do not wish to be understood as limiting the invention to any particular means for or method of heating the screenings preliminary to the forcing of the same down into the asphaltic binder.

In the accompanying drawings—Figures 1, 2, 3, and 4 are sectional views through sections of pavements or roadways in various stages of construction in accordance with the present invention.

The letter A in said drawings indicates the foundation which may be of a 1.2.5 concrete mix, laid on a suitable sub-grade B and having embedded therein metal reinforcement C. The top surface of the foundation is in the illustrations formed with pockets or binder retaining means by having partially embedded therein stone or rock D of somewhat larger size than that contained in the aggregate. This stone or rock may be of approximately egg size and is spread over the foundation while the latter is still plastic and suitably rolled or tamped so as to be partially embedded or anchored in the foundation, thereby forming binder retaining pockets or walls of approximately an inch in depth, as shown clearly in Fig. 1.

When the foundation is set sufficiently,

the heavy asphaltic oil binder which may contain more than 85% asphalt and preferably previously heated sufficiently to flow, is spread over the base so as to partly or wholly fill the pockets, the appearance then being somewhat as shown in Fig. 2, where the letter E indicates the binder.

In Fig. 3 the letter F indicates the clean screenings which may be substantially of a size which will pass a screen of one half inch mesh. After being heated as before described and rolled it is found that the screenings have been forced down and the asphaltic binder up. All voids are filled by the relative upward movement of the binder thereby driving out the air and making a practically homogeneous layer.

The heating of the screenings or small size aggregate not only insures the reduction of the binder to a limpid condition, but it drives off any moisture that may be present and causes the binder to intimately unite with the surface of each particle of aggregate as the latter is forced down and the binder up in the voids or interstices in the aggregate.

Roadways may be laid in accordance with the present invention even when the prevailing temperature is very low and use may be made of a binder having a much larger percentage of asphalt or liquefying solid matter than heretofore, thereby not only reducing the cost but increasing the life and wear resisting qualities of the pavement.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is—

1. The method of pavement construction which consists in laying a foundation substantially impervious to heavy oils and with oil retaining receptacles on its upper face; in spreading thereon a heated cementitious binder in liquid condition and which is substantially non-fluid at normal temperatures and in applying and pressing into the layer of cementitious binder a layer of heated

screenings whereby the screenings are forced down and the binder rendered limpid and displaced upwardly to fill the voids in and bond the screenings together.

2. The method of pavement construction which consists in laying a foundation substantially impervious to heavy oils and with oil retaining receptacles on its upper face; in spreading thereon a heavy asphaltic oil in a heated and liquid condition but which is non-fluid at normal temperatures; in spreading over the binder a layer of small size aggregate; in heating the layers of aggregate and binder and finally in applying pressure to force the aggregate down and displace the binder upwardly to fill the voids in and bond the aggregate together.

3. The method of pavement construction which consists in laying a concrete foundation and forming its surface into oil retaining receptacles; in spreading thereon a heavy asphaltic oil binder rendered liquid by heat but which is substantially non-fluid at normal temperatures; and in forcing down into said binder a layer of heated small size aggregate whereby the binder is rendered limpid, coats the particles of aggregate and is displaced upwardly to fill the voids in and bond the aggregate together.

4. The method of pavement construction which consists in laying a concrete foundation, in adding material to the top of the foundation to form receptacles, in applying a cementitious binder of heavy asphaltic oil previously liquefied by heating; in applying a layer of small size aggregate, then heating the aggregate and binder to render the binder more limpid and finally rolling the surface to force the aggregate down into the binder and displace the binder upwardly to fill the voids in the aggregate.

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Witnesses:

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