

ENGLISH AND AMERICAN PRACTICE IN THE CONSTRUCTION OF TAR SURFACES AND PAVEMENTS*

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TAR was used as a material for the construction of pavements as early as 1820, when a tar macadam pavement was laid in London. In 1834 an English patent was issued covering some of the features of the modern Pitchmac pavement. Tar concrete pavements were first built probably about 1840, in Nottingham, England. In Canada, tar concrete pavements were constructed in Ontario in the period from 1880 to 1891. Highway engineers in the United States have used tar concrete pavements in municipalities since 1870. It was not until 1906, however, that tar concrete was given consideration as a pavement for use on State highways. After conducting service tests for three years, Rhode Island, in 1909, was the first state to adopt the tar concrete pavement as a standard type for use on highways outside urban districts. Tar was first used for surface treatments in France in 1871. In the United States, thin tar surfaces were first employed in 1894, in Montclair, N.J. In America, however, the rapid development of the use of tar for surface treatment did not begin until 1906.

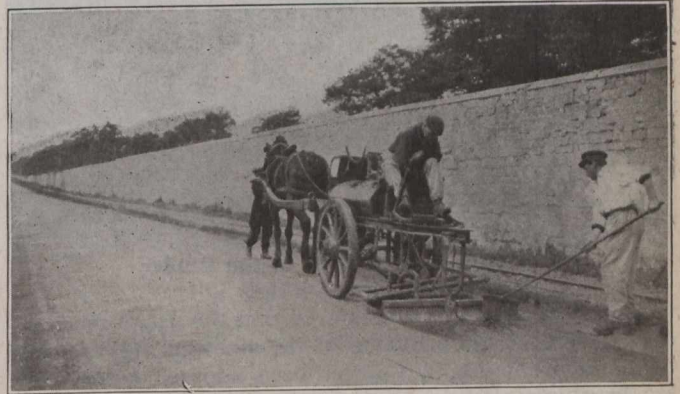
Tar Surfaces

Classification—Tar surfaces may be considered as divided into two classes.

The first class consists of thin superficial coats of tar with or without the addition of such materials as stone chips, fine gravel or sand. When this type of tar surface has been under traffic for from one to two years, the road metal, or other material composing the wearing course, is exposed.

The second class consists of coats of tarred material of appreciable thickness, usually over $\frac{1}{2}$ -inch, and are formed by the application of one or more treatments of tar with sand, gravel or stone chips added. Surfaces of this class are known as tar carpets or blankets. They

under the local conditions. All depressions, pot-holes, ruts or other irregularities should be filled with thoroughly compacted, tar-coated stone so that the whole surface of the roadway is even. All surplus dust must be removed so that the larger pieces of broken stone of the roadway surface are exposed, but without breaking the bond. This cleaning process is accomplished by the use of horse sweepers and fine bass brooms, with coarse fibre brooms and fine bass brooms, or by a vacuum process. If there is caked mud on the surface of the roadway, wet brushing will prove advantageous.



French Gravity Distributor Equipped with Brushes

It is apparent that the character of the cleaned surface will be affected by the method which was used in the original construction of the roadway. If there be followed the practice of some English and American engineers in using large-size stone varying from 1 to $2\frac{1}{2}$ inches in longest dimensions for the top course of a broken stone road, and if the stone be hard and tough, the desired surface can be easily secured. The surface of the large stones in such a roadway are easily cleaned by brushing, without the dislodgment of stones in the surface. A clean mosaic surface is of the utmost importance from the standpoint of the formation of a satisfactory bond between the broken stone and the tar. The maintenance of tar surfaces on wearing courses of large broken stone is economical, since after the tar surface wears away in spots, the mechanically interlocked large stones will of themselves generally have sufficient stability to withstand the effects of traffic until retreated.

On the other hand, if the top course of a broken-stone road has been constructed of a product varying in size from $\frac{1}{4}$ to $1\frac{1}{4}$ inches, it will be very difficult, if not impossible in the case of soft stone, to secure an even, clean surface. Even after thorough brushing, a film of impalpable dust usually covers the surface of the roadway. During hard brushing small depressions will probably be formed by the displacement of pockets of dust and the smaller sizes of stone. Furthermore, the wheels of vehicles may adhere to the tar and thus tear up the small mineral matter adhering to it. As soon as the tar surface wears out in spots, rapid disintegration of the exposed broken stone or gravel surface, with the consequent formation of pot-holes, is apt to occur.

If a tar surface is to be constructed on a new broken-stone or gravel road, or on one which has just been resurfaced, the tar should not be applied until the crust has had time to consolidate under the action of traffic and with the aid of the binding action of dust and moisture. If it be impracticable to postpone the surface treatment, special care should be taken to secure a maximum consolidation of the crust of the roadway by puddling and rolling.



English Hand Spraying Machine

rarely wear down uniformly to the wearing course and hence increase unevenly in thickness by retreatments.

Construction—Before constructing a tar surface on a broken stone or gravel road, every precaution should be taken to secure the best subdrainage which is practicable

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