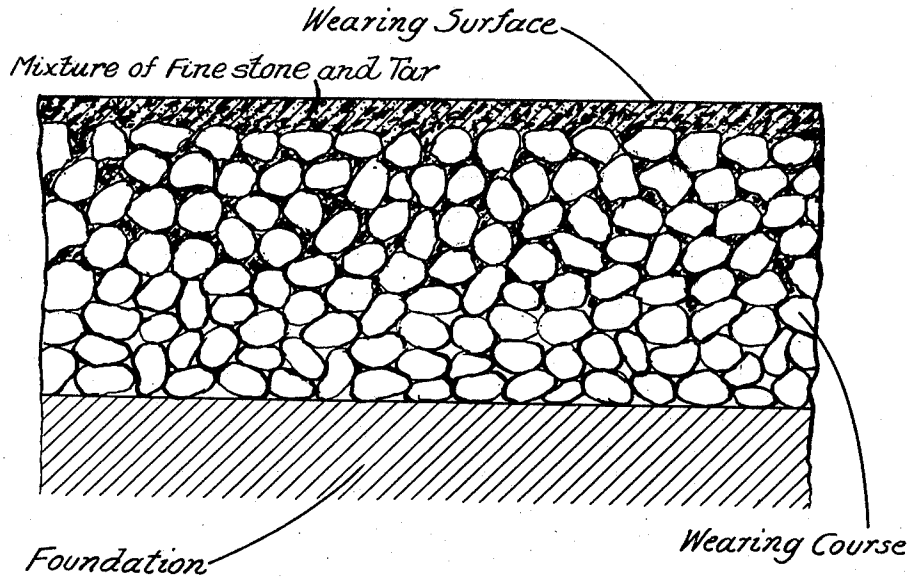
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PAVING PROCESS

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INVENTOR
F. S. Fleckenstein
BY
ATTORNEY

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PAVING PROCESS

Frederick S. Fleckenstein, Syracuse, N. Y., assignor to The Barrett Company, New York, N. Y., a corporation of New Jersey

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3 Claims. (Cl. 94—23)

This invention relates to pavements and more particularly to pavements constituted of mineral aggregate and bituminous material.

It is an object of this invention to provide a process of making bituminous pavements involving the application of a wearing course of mineral aggregate and a wearing surface of bitumen coated aggregate which results in a dense and uniform wearing surface. Other objects and advantages of this invention will be apparent from the following detailed description thereof.

It has been common practice in the construction of bituminous pavements to apply to a suitable foundation bituminous concrete composed of graded mineral aggregate consisting of particles of crushed stone, gravel or slag, coated with bituminous cement and to roll this layer with a suitable road roller to form the wearing course of the pavement. A coating of bituminous cement was applied to the wearing course and small stone particles spread over this coating in amount sufficient to fill the surface voids. The small stone particles were rolled into the coating layer. Any loose material was swept off the road surface and then a second coating of bituminous cement was broomed over the surface. This second coating was also covered with small stone particles. For the production of a satisfactory pavement it was found that atmospheric temperatures during the application of the wearing course should not be less than 45° F. and that traffic must be kept off the road surface until the final covering material had been applied.

In accordance with this invention a wearing course of crushed stone, slag or other mineral aggregate is applied in uncoated form to the road foundation and concurrently with the bonding together of the stone particles a wearing surface is formed thereon by applying thereto a mixture of finely divided mineral particles admixed with bituminous cement in amount such that the resultant mixture is sufficiently fluid under pressure to flow into the voids of the stone layer to key with the stones of the wearing course and cement these stones together as well as bind the wearing surface with the wearing course.

The accompanying drawing illustrates, somewhat diagrammatically, a road pavement constructed in accordance with this invention.

In the construction of the road, the mineral aggregate, such as crushed stone or slag, is screened to produce a mixture having the desired particle size. Preferably crushed stone which passes through a screen with circular openings of 3 inches diameter and is retained on a screen with circular openings of 1 inch diameter is employed for the wearing course. This stone without further treatment is applied to the road foundation and rolled by means of a usual road roller to the desired contour of the road.

The wearing surface is next applied. The material of the wearing surface is made by mixing finely divided mineral particles, such as sand, gravel or crushed slag, with a bituminous binder, preferably coal tar, which may be a straight distilled tar or a cut-back tar, i. e., a tar made by mixing a pitch remaining from the distillation of tar with a distillate oil. Either a straight distilled tar having a specific viscosity Engler at 40° C. of from 25 to 65 or a cut-back tar having a specific viscosity Engler at 40° C. of from 40 to 60, may be employed.

The finely divided mineral particles should be in a state of sub-division comparable to that of sand. One example of mesh characteristic of the finely divided aggregate found suitable for the wearing surface is as follows:

	Per cent
Passing ¼'' screen	90 to 100
Passing a No. 10 sieve	50 to 95
Passing a No. 200 sieve	0 to 15

In preparing the wearing surface the finely divided stone or other mineral is placed in the mixer, the tar is then added and the mixture agitated to produce a substantially homogeneous mass. The temperature of the stone need not be above 110° F., preferably at a temperature of from 60° F. to 100° F. The tar should be at a temperature of from 80° F. to 150° F. A straight run tar at a temperature of about 125° F. may be mixed with the finely divided stone. If a cut-back tar is used it is preferably heated to a somewhat lower temperature.

The amount of tar added to produce the fine mix is preferably from 8 to 10 per cent by weight of the complete mixture, i. e., the final mixture is constituted of from 90 to 92 per cent bitumen and 8 to 10 per cent tar. This fine mix may be readily spread over the layer of uncoated stone at atmospheric temperatures to form a wearing surface, i. e. the process herein described is a cold-lay process. The fine mix, after application, is well rolled. It has sufficient fluidity under pressure to flow into the interstices of the underlying stone layer to key with the stones of the course and cement them together. Enough tar is present in the fine mix so that under pressure a certain amount is squeezed out of the mix and coats some of the stone of the course on which

the mix is laid, thus aiding the bonding of the fine mix with the underlying course. Under rolling pressure the fine mix sets to form a dense wearing surface bonded with the underlying wearing course.

It will be noted that in the practice of this invention in order to produce an efficient pavement it is necessary to apply stone only to the road foundation and then apply a wearing surface of the fine mix, which upon rolling not only provides an efficient wearing surface but also functions to key or bond the wearing surface with the wearing course.

Since certain changes may be made in carrying out the above process without departing from the scope of the invention, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A cold-lay process of building a road pavement which comprises applying a layer of clean, coarse aggregate uncoated with bitumen or a bitumen solvent to a foundation to form a wearing course, rolling the wearing course to compact the same and then applying thereover a layer of aggregate particles in a state of subdivision similar to that of sand, admixed with coal tar of a specific viscosity Engler at 40° C. of from 25 to 65 in amount such that the resultant mixture is sufficiently fluid under pressure to flow into the voids of the underlying coarse aggregate layer, and rolling the second mentioned layer to cause it to firmly bond with the underlying layer to bond the particles of the underlying layer to each other, the fine aggregate and coal tar constituting the wearing surface and binder of the pavement.

2. A cold-lay pavement building process which comprises applying a layer of clean, coarse aggregate particles uncoated with bitumen or a bitumen solvent to form a wearing course, spreading over this layer a bituminous mixture constituted of finely divided aggregate particles having the following mesh characteristics:

	Percent
Passing a ¼'' screen	90 to 100
Passing a No. 10 sieve	50 to 95
Passing a No. 200 sieve	0 to 15

admixed with tar having a specific viscosity Engler at 40° C. of from 25 to 65 in the proportions of from 8 to 10 per cent. tar and 90 to 92 per cent. finely divided aggregate and compressing the said mixture to cause it to flow into the interstices of the underlying coarse aggregate course to key therewith and cement the stones together, the fine aggregate and tar constituting the wearing surface and binder of the pavement.

3. A cold-lay pavement building process which comprises applying a layer of clean, coarse graded aggregate particles of a size such that the particles pass through a screen with circular openings of 3 inch diameter and are retained on a screen with circular openings of 1 inch diameter to form a wearing course, said aggregate being uncoated with bitumen or a bitumen solvent, spreading over this layer a bituminous mixture constituted of finely divided aggregate particles having the following mesh characteristics:

	Percent
Passing a ¼'' screen	90 to 100
Passing a No. 10 sieve	50 to 95
Passing a No. 200 sieve	0 to 15

admixed with tar having a specific viscosity Engler at 40° C. of from 25 to 65, in the proportions of from 8 to 10 per cent. tar and 90 to 92 per cent. finely divided aggregate and compressing the said mixture to cause it to flow into the interstices of the underlying coarse aggregate course to key therewith and cement the stones together, the fine aggregate and tar constituting the wearing surface and binder of the pavement.

FREDERICK S. FLECKENSTEIN.