

UNITED STATES PATENT OFFICE

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PROCESS OF MANUFACTURING PLASTIC ASPHALTIC COMPOSITIONS FOR PAVEMENTS

No Drawing.

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This invention relates to an improvement in the method of mixing certain asphaltic compositions that are now in commercial use in the laying of roads, streets, walks, drive-ways, etc. whereby the mixed asphaltic road material may be more easily unloaded from railroad cars, shoveled out of piles, and spread upon roadways.

This invention is limited to those asphaltic compositions which are mixed at a temperature less than the boiling point of water. Such compositions contain a mineral aggregate, a fluxed asphalt and a liquefier. A liquefier is defined as a liquid hydrocarbon which will volatilize on exposure to air, within a period of two years in a roadway. The liquefier may be added to the asphalt before it is mixed with the aggregate or the liquefier may be added to the aggregate before heated asphalt is added or the liquefier may be added to a mixture of aggregate and hot asphalt. The above processes are now in use and my invention is confined solely to an improvement in the method of mixing the constituents in the above processes.

Such compositions depend on the evaporation of their volatile constituents for their setting up power. The control of this hardening process has heretofore been done by regulating the amount of the fluxing or liquefying agent added to the composition or by varying the degree of volatility of the same.

In the storing of such compositions in piles or in the shipment by railroad cars it has been found that unless a comparatively high percent of liquefier were added that the difficulty in handling became so great as to interfere with commercial success, especially in cool weather.

On the other hand such a comparatively high percentage of liquefier in the asphalt makes it impossible to keep enough asphalt on the separate particles of aggregate to insure a long life to the composition under severe traffic and weather conditions. The

thinned asphalt may run through truck loads of mixed material or through the bottom of loaded railroad cars, thus decreasing the percentage of the original mixtures. The setting up process is delayed and the composition may be so thin that it will spread out under a roller and traffic.

With my improved method it is possible to use the minimum quantity of liquefier required to flux the asphalt or to coat the stone previous to or subsequent to the addition of hot asphalt, at the same time any amount of asphalt can be added to the aggregate, depending on its grading, as to insure a proper degree of thickness of coating.

My improved method of handling is attained by adding a small amount of water with an emulsifying agent as soap, clay, and the like to the mixture, while it is being made. A hydrocarbon emulsion can also be used. The effect is to produce a slight emulsification of the asphalt on the surface of each separate particle. This emulsification is not sufficient to prevent the packing action of a roller or traffic upon the mixed material when spread on a roadway. Only enough emulsifying agent is added to emulsify but a small part of the asphalt in the mixed material.

The general effect, until the water has evaporated, is to reduce the ductility and tenaciousness of the asphalt binder permitting the mixed material to be handled and spread much more easily than if no partial emulsification has been produced. After the water has evaporated, the original ductility and tenacity are restored to the asphalt binder.

In cool weather the effect of the slight emulsification in the mixture is more pronounced. At temperatures of 50 degrees Fahrenheit it is impossible with some standard mixtures to unload railroad cars filled with asphaltic material, not emulsified in any way, without resorting to heating the set up, mixed material by steam, while with identically the same material partially emulsified

the unloading is accomplished easier with no heating.

On account of the packing action of a pile of mixed asphaltic composition I have found that water is retained in the pile for some time and that the emulsified effect is retained until the water has entirely dried out.

Without limiting myself to these proportions or the material employed I have found the following mixtures to give good results:

Mineral aggregate-----	90	to 94%
Asphalt -----	4	to 7%
Liquefier-----	0.4	to 1%
Water -----	1	to 2%
Soap, clay and the like----	0.1	to 0.5%

I claim:

1. An improved method of producing asphaltic compositions which comprises adding to a cold mix asphalt composition comprising aggregate coated with asphalt fluxed with a liquefier normally used in the art, a small amount of water and an emulsifying agent to produce a partial emulsification only of the asphalt largely on the surfaces of the asphalt coated particles of mineral matter.

2. An improved method of producing asphaltic compositions which comprises adding to a cold mix asphalt composition comprising aggregate coated with asphalt fluxed with a liquefier normally used in the art, a small amount of a hydrocarbon emulsion.

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