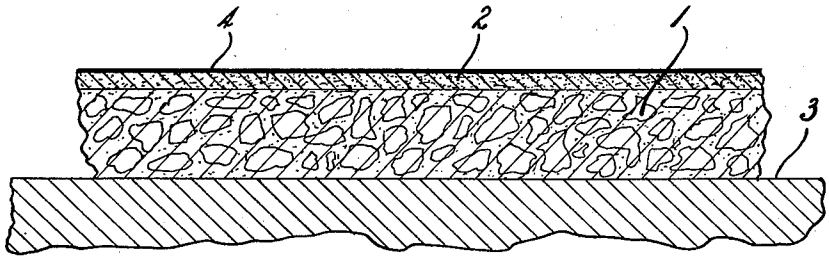
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COMPOSITE STRUCTURE AND METHOD OF MAKING THE SAME

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COMPOSITE STRUCTURE AND METHOD OF MAKING THE SAME

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This invention relates to a composite structure consisting of a lower or foundation layer, containing a bituminous material, and a superimposed layer having a comparatively hard and permanent decorative surface, and to the method of preparing such a composite structure.

The present invention also relates to a composition of matter and to the method of applying it, as a superimposed layer, to a foundation layer in which a bituminous material is one of the essential ingredients thereof.

In preparing certain structures, such as flooring, in which a bituminous material, such as emulsified asphalt, is employed as one of the principal ingredients, it is difficult to produce a structure having a permanent decorative appearance. For instance, when a coloring material, such as red iron oxide, is mixed with material containing emulsified asphalt, the coloring imparted to such material is only temporary, because eventually the asphalt bleeds into the color and destroys it.

It is therefore an object of my invention to provide an improved composite structure in which a bituminous material, such as asphalt, is one of the principal ingredients.

Another object of my invention is to provide an improved composite structure which includes a foundation layer containing a bituminous material, such as asphalt, and an improved superimposed layer of a comparatively hard colored material having a permanent decorative appearance.

A further object of my invention is to provide an improved process of applying a composition of matter, containing a coloring material or pigment, to a foundation layer containing emulsified asphalt, to thereby produce a hard composite structure having a permanent decorative appearance.

A still further object of my invention is to provide an improved composition of matter which may be applied as a superimposed layer to a foundation layer containing a bituminous material, such as asphalt, to thereby form a superimposed layer that is comparatively hard and which has a permanent decorative appearance.

My invention is illustrated in the accompanying drawing in which the single figure is a cross-sectional view, showing a composite structure having a foundation layer 1 and a superimposed layer 2.

The lower or foundation layer 1 of the present composite structure, such as a flooring, contains a bituminous material, such as asphalt, and the upper or superimposed layer 2 is composed of a comparatively hard material containing a pigment, such as ferric oxide, such upper or superimposed layer being cemented to said lower or foundation layer.

In preparing my improved composite structure, the foundation layer 1 is applied in the usual manner to a suitable supporting surface, such as the surface 3, although no coloring material is employed in such foundation layer. For convenience, said foundation layer will be described as being applied to an ordinary cement surface, although it is to be understood that my improved composite structure may be applied to wooden, metal or other surfaces.

The surface to which the foundation layer of the composite structure is applied is first cleaned, and asphalt emulsified with a suitable liquid solvent, such as water containing bentonite or other suitable emulsifying clay, is applied thereto, any holes or depressions in such surface being filled with a mixture of approximately one part cement, one part sand, three parts gravel and one part emulsified asphalt, and such mixture is then permitted to dry on said surface.

In forming the foundation layer on such surface, one part of cement is mixed with three parts of sand, five parts of gravel and sufficient water to form a uniform mortar. Approximately two parts of an emulsified asphalt are then mixed with the mortar as a binding agent. Instead of asphalt, it will be understood that other natural hydrocarbons, such as tar, ozocerite, manjak or elaterite, may be employed as such binding agent. The mixture is applied to the aforesaid surface and raked to the desired level, the final level being obtained in the usual manner by means of striking-off boards. The mastic composition thus provided is allowed to stand until it is capable of bearing the weight of an ordinary person without forming appreciable foot marks, and is then floated by hand or by an ordinary power float, care being taken that the pores are left open.

In accordance with my invention, the upper or superimposed layer, comprising a new composition of matter, is next applied to the foundation layer. In preparing such upper or superimposed layer, a pigment, such as iron oxide, yellow ochre, zinc oxide, or one or more such pigments, is mixed with silica sand or other hard aggregate or material, such as iron or other metal chips or carborundum grits, to which a sufficient amount of a hydraulic cement, having suitable

binding properties, is added to cement the sand and pigment particles together. If the type of coloring pigment used makes it necessary or desirable to use a plasticizer, pozzuolanic material may be added to the other ingredients. After thoroughly mixing the ingredients, the mixture is sifted onto the freshly laid foundation layer containing the emulsified bituminous material. The mixture is then compressed onto the foundation layer by means of a float, such as a power floating machine or a float of the rotary disk type. After such upper or superimposed layer has been dried to the point of withstanding heavy foot traffic, a finishing coating 4 of hard wax, such as carnauba wax, varnish or the like may be, and preferably is, applied to the upper surface thereof, although such a finishing coating is not essential. The purpose of the wax, varnish or the like is to fill the pores of the upper or superimposed layer and thus provide a smooth top surface, to increase or heighten the color thereof, and to provide a more decorative appearance.

The following specific example of an upper or superimposed layer will serve to illustrate that part of my invention:

One part by volume of Spanish red oxide is thoroughly mixed with two parts by volume of Portland cement and four parts by volume of silica sand. The resulting mixture is applied by sifting it onto a freshly laid foundation layer, in which emulsified asphalt is utilized as one of the principal ingredients, and which has been processed to the point where it is ready for the application of the said mixture, care being taken to leave the pores of the foundation layer open. A floating machine is then applied and when the upper or superimposed layer has set to the point where it is capable of withstanding heavy traffic, a finishing coat of wax, varnish or the like may be applied to the top surface of said upper or superimposed layer, the purpose of the wax, varnish or the like being to give the composite structure thus formed a more decorative appearance.

I have found that when the foregoing mixture is applied to a properly laid foundation layer in which emulsified asphalt is utilized as one of the ingredients, the asphalt will not affect the color of such mixture and hence will not affect the color of the upper or foundation layer. The composite structure, such as flooring, may be scored, if desired, and is ready for service as soon as it is set up. Flooring, as thus prepared, may be subjected to heavy traffic under ordinary circumstances in approximately thirty-six hours.

While I have described specific proportions in the foregoing example, it will be understood that I do not desire to be limited to the exact proportions mentioned. The Portland cement serves to bind the pigment and the fine, hard aggregate or material together, and it also acts as a dehydrating agent for the moisture in the foundation layer. Sufficient Portland cement should therefore be applied to bind the fine, hard aggregate and pigment together and to dehydrate the foundation layer. The amount and type of pigment which is added will depend, of course, upon the particular color and the intensity thereof desired, and the amount of fine aggregate which is added will depend upon the hardness desired in the upper or superimposed layer. When the ingredients are present in the proportions indicated and a finishing coating of hard wax, varnish or the like is applied to the upper or superimposed layer, a hard finish is provided having a decorative effect, and in which the color is permanent.

From the foregoing, it will be apparent that I have provided an improved composite structure, such as a flooring, in which emulsified asphalt may be employed in the foundation layer and which composite structure has a permanent decorative appearance and a hard wearing surface.

It will also be seen that I have provided an improved upper or superimposed layer for foundation layers containing emulsified asphalt, the color of said upper or superimposed layer being permanent.

It will also be understood that I have provided a new process of preparing composite structures, such as flooring, in which an emulsified asphalt is employed in the foundation layer and by means of which a highly decorative appearance may be permanently obtained without in any manner affecting the appearance of the surface of such composite structure.

What I claim is:

1. A composite floor structure comprising, a comparatively thick foundation layer having a substantial amount of resiliency and being composed essentially of a mixture of a hydraulic cement and an aggregate bound together by bituminous material, in combination with a comparatively thin upper layer composed essentially of a hard, wear resisting aggregate, a pigment and hydraulic cement in an amount sufficient to bind the pigment and hard aggregate together and cement said upper layer to said foundation layer, said upper layer being substantially free from ingredients which impair the color of the pigment.

2. The method of preparing a composite floor structure which comprises applying a mortar composed essentially of an aggregate, hydraulic cement and an emulsified bituminous material to a suitable surface to form a foundation layer, leveling the layer and permitting it to partially dry until it is capable of sustaining the weight of an ordinary individual without forming appreciable foot marks, applying a thin upper layer composed essentially of a hard, wear resisting aggregate, a pigment and hydraulic cement in an amount sufficient to bind the aggregate and pigment together when set, and compressing the upper layer upon the foundation layer to force upper layer particles into the pores of the lower layer and to cause the hydraulic cement to draw sufficient moisture from the lower layer to bind the pigment and aggregate together and to cement the upper layer to the lower layer.

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