METHOD OF MAKING A PAVEMENT

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Filed: May 20, 1970
Appl. No.: 38,867

U.S. Cl................... 404/75, 106/273 N, 106/282, 404/17, 404/82
Int. Cl...................................... E01C 7/26
Field of Search.......................... 106/273-285;
............................................. 94/3, 9, 7, 19, 23

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ABSTRACT
A method of making a pavement in which a bituminous binder is mixed with an aggregate and the mixture is compacted to form a pavement. A layer of fibers is then spread over said pavement in the form of a slurry of a mixture of water and a fibrous material and forced into the upper surface thereof to thus form a pavement surface having said fibers embedded in its upper surface.

1 Claim, No Drawings
METHOD OF MAKING A PAVEMENT

BACKGROUND OF THE INVENTION

Whenever a bitumen-aggregate film is employed as a paving surface on a highway or the like, it is subjected to repeated rollings during compaction and later to the wear of traffic which may produce some detrimental results. The bituminous binder wears off of the surface of the aggregate with which it is employed leaving the aggregate exposed so that it chips and breaks off. When a sand mastic is employed with coarser aggregate particles, to increase the skid resistance of the pavement, said mastic will be lost during the wearing off of the binder and the pavement will thus lose its skid resistance. In order to prevent such wearing of the binder it has been proposed to cover its surface with stone chips, but said chips are relatively expensive, become loose, and actually create wear.

It is an object of this invention to provide a pavement of the type employing a bituminous binder which will overcome the difficulties and disadvantages discussed above.

SUMMARY OF THE INVENTION

In accordance with one form of the invention, a bituminous binder is spread over the surface to be paved, and an aggregate is then spread over the binder. The aggregate and binder are compacted, such as for example by rollers, to form a pavement coating over said surface. A layer of fibrous material is then spread over this pavement coating and is compacted to force the fibers into the upper strata of the coating so that said fibers are embedded within said coating. The fibers thus form an interlaced network at the upper surface of the pavement to retard the wearing away of the binder.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

My novel pavement comprises an aggregate bound together by a bituminous binder with a network of fibers held in the binder at the upper surface of the pavement. The binder employed may be any type of conventional bituminous binder, such as emulsified asphalt, asphalt, cut-back asphalt, tar, or various mixtures thereof depending upon the type of pavement desired. The binder may be applied to the surface to be paved in either hot or cold condition, again depending upon the type of pavement desired.

Any type of desired aggregate may be employed with the binder. To this end, a coarse rock may be employed, or a sand, or mixtures thereof, to produce the desired type of pavement.

The fibrous material, which is applied over the surface of the binder or the binder and aggregate, is applied at the rate of from about 1 lb. to about 5 lbs. per square yard. The fibers may be applied as by blowing them over the pavement coating, spreading with conventional spreaders, or mixing them with water to form a slurry which is spread over the pavement coating. Said fibers may be formed from any desired type of fibrous material, such as for example, asbestos, nylon, terylene, rayon, rockwool, and glass. Phenolic fibers, fibrous rubber, and waste fibers from ground brake shoe linings may also be employed.

The fibers may be mixed with other materials to produce a pavement having certain desired characteristics. For example, the fibers may be mixed with insolubilizing agents such as hydrated lime, portland cement, amines, imidazolines, and metal salts such as aluminum sulfate and chromates, said agents being added at the rate of from about 1 to about 5 percent based upon the weight of the fibers. Such insolubilizing agents, which insolubilize the bitumen, penetrate into the surface of the pavement coating to thereby improve the resistance of the resulting pavement to water and thus cause the fibers to be held more firmly in a tough surface film.

The pavement is normally formed by spreading a layer of the binder over the subgrade or surface to be paved, and a layer of aggregate is then spread over the binder. Alternatively, the binder and aggregate can be premixed together and then spread in one operation. This binder-aggregate mixture is compacted, and the fibers are then spread over it. After the fibers have been spread, the surface is rolled to embed said fibers into the pavement and to further compact said pavement insuring a coating of the binder over the surface of the aggregate for holding the aggregate particles together. It is to be understood that multiple layers of the binder, aggregate, and fibers can be laid over a subgrade, base, or other surface to form a pavement of the desired strength and thickness. The resulting pavement will normally contain from about 3 to about 8 percent bitumen based upon the type of pavement desired.

In a typical example of the use of the invention, a binder of an emulsified asphalt was spread over a paved surface at the rate of about 0.33 gal. per sq. yard. An aggregate having a particle size of five-eighths inches was then spread over the binder at the rate of about 30 lbs. per sq. yard. The aggregate and binder were then compacted as by rolling and a second application of binder was spread thereover at the rate of about 0.2 gal. per sq. yard. Asbestos fiber was blown over this second layer of binder at the rate of about 3 lbs. per sq. yard, and the fiber was then embedded into the binder by rolling. A third layer of the binder was spread over the pavement surface at the rate of about 0.2 gal. per sq. yard, and a second layer of the aggregate was spread over said third binder layer at the rate of about 30 lbs. per sq. yard. The pavement was again compacted by rolling. A fourth layer of binder was spread over the pavement at the rate of about 0.2 gal. per sq. yard and a second layer of asbestos fiber was blown thereover at the rate of about 3 lbs. per sq. yard. The fiber was again embedded into the binder by rolling. The resulting pavement thus consisted of layers of binder and aggregate with layers of high tensile strength fibers and binder interposed between layers of aggregate with a layer of fiber and binder constituting the upper surface of said pavement. It is to be understood that any number of such layers of pavement can be laid over such a subgrade to produce a pavement of the desired characteristics and properties.

While the invention has been described as being used to form a pavement surface, it is to be understood, of course, that it can be employed in many other applications such as repairing cracks and breaks in pavements, resurfacing pavements, and the like.

I claim:
1. A method of making a pavement, comprising the steps of spreading a layer of a mixture of a bituminous binder and an aggregate over the surface to be paved, compacting said layer, spreading a slurry of a mixture of water and a fibrous material over the upper surface of said layer after it has been compacted at a rate to provide from about 1 lb. to about 5 lbs. of said fibrous material per square yard of said upper surface, and again compacting said layer and fibrous material into said upper surface of said layer.

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