UNITED STATES PATENT OFFICE.

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FIBERED ASPHALT.

1,340,181. Specification of Letters Patent. Patented May 18, 1920.

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To all whom it may concern:

Be it known that we, GERSHON L. OLIENSIS and JOHN STROTHER MILLER, Jr., citizens of the United States, and residents of Philadelphia, in the county of Philadelphia and State of Pennsylvania, and Rahway, in the county of Union and State of New Jersey, have jointly invented certain new and useful Improvements in Fibered Asphalt, whereof the following is a specification.

In many of the industrial applications of asphalt, it is important to increase the natural cohesion of the asphalt, thereby adding to its stability. Various methods of doing this are well known in the art. Our invention relates to the accomplishment of this end by the homeogeneous incorporation with the asphalt of completely separated fibers, producing what may be called fibered asphalt.

Efforts have heretofore been made to accomplish this end, by adding masses of fibers to asphalt, but, so far as we are aware, the methods heretofore in use have, because of the fact that the individual fibers are not completely separated, required the incorporation of a very considerable percentage of fiber to obtain the desired increase in cohesiveness in the asphalt, and this considerable proportion of fibrous material thus added, has consequently resulted in a product not liquefiable by heat.

This asphalt product which our invention produces, has the advantage of being liquefiable by heat so that when being fabricated for industrial purposes, as for instance, prepared roofing, it may be poured while liquid, this being a very desirable quality.

We accomplish this result by employing dry fibrous material and completely disintegrating the same before it is added to the asphalt. The dry disintegrated fibers are added slowly to melted asphalt, and incorporated therewith in such a way as to effect perfectly even distribution of the fibers through the asphalt with production of a homogeneous mass of fibered asphalt which has the required cohesion without having lost its capacity for liquefaction.

In practising our invention, we take a suitable asphalt, either natural or artificial, and with or without a suitable flux. The asphalt is melted, requiring for this purpose a temperature of between 300 and 450 degrees F. We take a dry mass of felted fibers, such as a piece of roofing felt, and completely disintegrate the same with entire separation of all of the original fibers. It is convenient to accomplish this by the attrition of a mass of roofing felt upon the surface of a fine wire mesh screen, in which case the screen acts both to comminute or grate the dry fibrous mass into its component fibers, and also to prevent the discharge of any portions of fiber not completely disintegrated, and, therefore, not capable of passing between the meshes of the screen. For this purpose, we find that a wire mesh screen having some thirty meshes to the inch will suffice for the proper reduction of roofing felt to a condition of completely separated individual fibers.

The separated fibers are then slowly and evenly distributed upon the surface of the melted asphalt, and incorporated therewith by moderate stirring or agitation of the same. We have discovered that by reason of the complete separation of the fibers, which we have secured, we are able by incorporating only a small percentage of fiber to the asphalt, to disperse the same so evenly throughout the asphalt as to obtain the desired increase in cohesion of the asphalt by the employment of a very much smaller percentage of fiber than has heretofore been deemed necessary for a similar purpose, and this small percentage of fiber has the advantage of yielding a product which has not lost its capacity for liquefaction.

Thus we find that by adding to melted fluxed Trinidad Lake asphalt from three to four per cent. of dry fiber, separated as described, we obtain fibered asphalt, highly useful in the roofing and other arts and capable of being fabricated by pouring the material while melted. We would point out that the accomplishment of the even incorporation of the fiber with the asphalt in percentages sufficiently small to accomplish the desired result, without making a non-liquefiable product has a two-fold advantage: First the superior utility of the product for many industrial purposes. For the production of sheets, the fibered asphalt can be distributed over cloth, scrim, paper, or other mediums, in a molten condition and distribution and control of the thickness of the product regulated by scraper plates, in

conjunction with regulation of rapidity of the flow. Furthermore, the property of liquefaction of fibered asphalt permits of molding the product by pouring the molten material into molds of various shapes.

Second, the securing of a more perfectly homogeneous product, for, in processes which require in order to secure the desired cohesion the addition of more fiber than can be added without loss of the capacity of the asphalt to melt, it is evident that during the latter part of the process of adding the fiber to the asphalt, the latter will have lost its liquid form, and the subsequent addition of fiber must be made to it while solid or semi-solid. In all previous operations for adding fiber to asphalt of which we have knowledge, this has been the case. Efforts have been made to evenly distribute fiber throughout solid or semi-solid asphalt, but it is our belief that this cannot be perfectly accomplished, but that under such circumstances the fibers pass into the asphalt in bunches or tangled masses, and so remain notwithstanding all efforts to subsequently break up these bunches by working or kneading the asphalt. As a consequence, the resulting product is not completely homogeneous, contains a larger quantity of fiber than is either necessary or desirable for the accomplishment of the desired result, with the further disadvantage of producing a non-waterproof product, for considerable masses of fiber when added to asphalt retain their capacity for absorbing and retaining water, and unless the dispersion of the separated fibers through the asphalt is quite complete, the resulting asphalt is not wholly water-proof. When the fibers are not completely separated, and reach a considerable volume, say twenty per cent. in weight, the asphalt is notably lacking in water-proofing qualities.

Having thus described our invention, we claim:

1. Fibered asphalt consisting of asphalt having completely separated individual fibers, evenly dispersed throughout it, the total percentage of the fibers being about 3 or 4%, and, therefore, sufficient to markedly increase the cohesion of the asphalt but not sufficient to render it non-liquefiable.

2. The process of producing liquefiable fibered asphalt which consists in comminuting a mass of dry fibers until such fibers are completely separated; adding such dry separated fibers slowly and evenly to melted asphalt while agitated in quantity sufficient to impart to the asphalt the desired cohesion but not sufficient to render the asphalt non-liquefiable.

In testimony whereof, we have hereunto signed our names at Zanesville, Ohio, this 10th day of December, 1918.

GERSHON L. OLIENSIS.
JOHN STROTHER MILLER, JR.

Witnesses as to Gershon L. Oliensis:
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