

UNITED STATES PATENT OFFICE.

CYRUS M. WARREN, OF BROOKLINE, MASSACHUSETTS.

ROOFING AND PAVING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 345,399, dated July 13, 1886.

Application filed January 2, 1884. Serial No. 116,234. (No specimens.)

To all whom it may concern:

Be it known that I, CYRUS M. WARREN, a citizen of the United States, residing at Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Roofing and Paving Material, of which the following is a specification.

My invention relates to improvements in roofing and paving compounds or compositions.

My invention consists in a roofing and paving material composed of natural asphaltum and a residuum of the distillation of sludge-oil in any suitable proportions.

In preparing my compound for use as a roofing or paving cement, I prefer to employ equal parts of refined Trinidad asphaltum and the residuum of sludge-oil as obtained in distilling the latter to about 600° Fahrenheit. These materials are fused together at about 300° Fahrenheit, and agitated until an entirely homogeneous compound is formed. To make the compound of suitable consistency for saturating roofing paper or felt, I prefer to use the ingredients in the proportion of one part of asphaltum to one-third of one part of the residuum; but the proportions may be varied according to any variation there may be in the consistency of the residuum, or to adapt the compound for any special purpose.

If desirable for any special purpose, the compound may be thinned with petroleum residuum, liquid wax-tailings, candle-tar, one or more of these or other suitable oily or tarry materials; or it may be thickened, if required, by an admixture of resin, petroleum still-wax, candle-gum, one or more of these or other suitable hard or pitchy material.

Instead of combining the sludge-oil residuum with asphaltum, it may be combined with rosin, petroleum still-wax, candle-gum, one or more of these or other equivalent hard or pitchy material in any suitable proportions to form either a roofing cement or a saturating material for paper or felt; or by carrying the distillation of the sludge-oil sufficiently above 600° Fahrenheit to make a hard residuum, the latter may be combined

with petroleum residuum, liquid wax-tailings, candle-tar, one or more of these or other equivalent liquid or softening material in any suitable proportions to form either a roofing-cement or a saturating material for paper or felt; but none of the cements or ingredients here described are so good as the compound with asphaltum, as they are less tough at low temperatures.

It will of course be understood that when the compound of asphaltum and the residuum of sludge-oil is to be used as a paving material that pulverized stone, small gravel, sand, or other like material is incorporated in the cement, as is the common practice with other asphaltic cements used for paving purposes, and when used as a thick coating for covering the upper surface of roofs fine sand, ground stone of any suitable kind may be used to thicken the compound, or the melted compound may be spread or poured upon the roof and immediately filled with pebbles; this being the more common practice with cements of this class. As already indicated, the consistency of the residuum of sludge-oil will depend chiefly on the temperature to which the distillation is carried, and may vary from that of thick tar to that of hard and brittle asphaltum. Whatever may be the consistency, it closely resembles in appearance and properties a natural bitumen of same consistency. In color, brilliancy, (of fracture,) and physical properties this hard bituminous product (residuum of sludge-oil) has a striking resemblance to the present natural asphaltum, such as the Egyptian, and is hardly distinguishable from the latter substance, also in its behavior with most solvents and reagents. Sulphuric acid, however, dissolves it completely, while the asphaltum is partly insoluble. It is the same with nitric acid. It is, moreover, distinguishable from the asphaltum by its greater specific gravity—viz., 1.125 as against 11.098 for Egyptian asphaltum.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A roofing or paving material composed of the residuum of sludge-oil combined with

bituminous, oleaginous, or resinous substances, substantially such as described.

2. A roofing or paving material composed of the residuum of sludge-oil and asphaltum,
5 or its described equivalent, as set forth.

3. A composition for saturating or coating roofing, felt-paper, or fabric, consisting of the

residuum of sludge-oil and pretroleum residuum, or other described equivalent softening material, as set forth.

CYRUS M. WARREN.

Witnesses:

ALLEN LINCOLN,

WILLIAM R. WARREN.