

UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING A COAL-TAR PRODUCT.

1,355,099.

Specification of Letters Patent.

Patented Oct. 5, 1920.

No Drawing.

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To all whom it may concern:

Be it known that I, JOHN M. WEISS, a citizen of the United States, residing at 210 West 110th street, New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Processes of Making a Coal-Tar Product, of which the following is a specification.

10 This invention relates to the production or isolation of certain constituents of tars, such as coal tar, water gas tar, oil gas tar, blast furnace tar, etc. It relates more particularly to the process of separating such
15 of these constituents as are insoluble in petroleum naphtha from the other constituents, and also to the product thereby obtained.

It is well known that such tars consist of
20 a large number of compounds of different characteristics, a large portion of which can be removed by distillation. The residue left after distilling is commonly known as pitch. The melting point of this residue or pitch
25 depends upon the extent to which the distillation has been carried and the commercial product varies from about 100° F. to 300° F., or higher. The original tars as well as the pitches derived therefrom contain a certain amount of so-called "free carbon" which can be removed by adding a solvent, such for example as benzol, to the tar or pitch, which solvent does not dissolve the
30 "free carbon", and then filtering the solution, after which the benzol may be evaporated from the filtrate to leave the bituminous material which then contains substantially no "free carbon".

By the expression "free carbon" as herein used, is meant the material in tars that is insoluble in hot benzol or similar coal tar solvents. It is not pure elemental carbon, but is a mixture of this substance with insoluble hydrocarbons and other compounds
40 of high carbon content, and it varies considerably in amount in tars from various sources.

In practising this invention the tar or pitch either before or after the removal of the "free carbon" is extracted with petroleum naphtha by mixing with the bitumen a sufficient amount of the petroleum naphtha to dissolve the constituents of the bitumen that are soluble in the petroleum naphtha. The residue is then separated from the

petroleum naphtha solution in any convenient manner as by filtration, and constitutes the product that is insoluble in petroleum naphtha. If the "free carbon" has not been removed from the bitumen before the petroleum naphtha extraction it may be removed
60 as above indicated after the constituents insoluble in petroleum naphtha have been isolated.

Tar bitumens of the character indicated
65 ranging from liquid tar to the hardest grades of pitch may be treated in accordance with this invention to obtain a bitumen that is insoluble in petroleum naphtha and such product may be made containing "free carbon", or may be made free from it according to the desires of the user. The melting point of the substance thus obtained does not depend entirely upon the original tar bitumen from which it was obtained, and in
75 all cases will be a hard, brittle bitumen of high melting point. The substances thus obtained, when free of the so-called "free carbon", have a somewhat brownish tint or hue and are not jet black as is the case with
80 tar or pitch.

The substances thus obtained are especially useful for lining or coating the inside of tanks or receptacles that are to contain petroleum products because they are insoluble in or practically unaffected by such products even after long exposure to the action of the same. If necessary, these substances may be fluxed with non-volatile materials that are more nearly liquid than these
90 substances, and are themselves insoluble in petroleum naphtha, for the purpose of producing a mixture that is softer and can be more easily handled and applied than the hard bitumen. The substance or such
95 fluxed material may, however, be dissolved in any suitable solvent, such, for example, as coal tar naphtha, and applied *in situ* as a layer or film after which the solvent is permitted to evaporate.

These bituminous substances which are insoluble in petroleum naphtha find a wide variety of uses in places where resistance to petroleum products is an important consideration. For example, they may be used as
105 binders for mastics which have to resist the action of petroleum products. These substances possess high electrical insulating properties and may be used to cover the surface of electrical conductors that are sub- 110

jected to the influence of petroleum products, or fabrics may be saturated with solutions of these substances without decreasing their insulating qualities, but actually increasing the same, while at the same time rendering them resistant to the action of gases or fumes or other products of petroleum.

Claims:

- 10 1. The herein described process which comprises treating the coal tar naphtha soluble constituents of tar bitumen with petroleum naphtha and separating the soluble portion from the insoluble residue.
- 15 2. The herein described process which comprises treating the coal tar naphtha soluble constituents of coal tar bitumen with petroleum naphtha and separating the soluble portion from the insoluble residue.
- 20 3. The herein described process which comprises extracting some of the coal tar naphtha soluble constituents of tar bitumen by means of petroleum naphtha, thereby leaving a residue substantially insoluble in
- 25 said naphtha.
4. The herein described process which comprises treating the coal tar naphtha soluble constituents of pitch derived from tar with petroleum naphtha and separating

the soluble portion from the insoluble 30 residue.

5. The herein described process which comprises treating the coal tar naphtha soluble constituents of coal tar pitch with petroleum naphtha and separating the soluble portion from the insoluble residue. 35

6. The herein described process which comprises treating coal tar bitumen with a solvent derived from coal tar, filtering, removing the solvent from the filtrate by distillation and extracting from the distillation residue such constituents as are soluble in petroleum naphtha. 40

7. The herein described process which comprises treating tar bitumen with benzol, filtering, distilling the benzol from the filtrate, and extracting from the distillation residue the constituents that are soluble in petroleum naphtha. 45

8. The herein described process which comprises treating pitch derived from tar with benzol, filtering, distilling the benzol from the filtrate, and extracting from the distillation residue the constituents that are soluble in petroleum naphtha. 50

In testimony whereof I affix my signature. 55

JOHN M. WEISS.