

UNITED STATES PATENT OFFICE.

REINHOLD WALLBAUM, OF CHARLOTTENBURG, GERMANY.

HYDROCARBON EMULSION.

1,014,103.

Specification of Letters Patent.

Patented Jan. 9, 1912.

No Drawing.

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To all whom it may concern:

Be it known that I, REINHOLD WALLBAUM, chemist, a German subject, residing at No. 40 Guerickestrasse, Charlottenburg, near Berlin, Germany, have invented a new and useful Hydrocarbon Emulsion, of which the following is a specification.

The subject-matter of my invention is a process of manufacturing emulsion products of asphalt, coal-tar pitch, petroleum pitch, ozocerite, Japan wax and the like, or mixtures of these substances.

Without using considerable quantities of solvents it has not been possible heretofore to emulsify asphalt, coal-tar pitch, petroleum pitch and the like or mixtures thereof in a simple manner.

A primary object of my invention is to remedy this defect. I attain this end in a simple manner by melting asphalt, coal-tar pitch, petroleum pitch and the like with saponifiable substances, such as resin, naphthenic acid, a fatty acid and the like, and pouring the hot molten mixture into a boiling solution of a resinate, naphthenate of an alkali or ammonia, or of the alkali or ammonia salt of a fatty acid, said resinate or other salt preferably containing an excess of alkali or ammonia, and the whole mixture being violently agitated. By naphthenic acids which have recently been put onto the market are to be understood the acids which are separated from the greasy lyes obtained as a by-product when refining mineral oil. Owing to the saponification reaction the asphalt and the like is converted into a finely divided form, in which it is readily taken up by the soap solution. This process is greatly aided by the steam which is generated and by the violent agitation. In this manner a mass of a butterlike consistency which can be diluted with water is obtained.

Example: 100 parts of resin and 600 parts of asphalt are melted together and poured into a boiling solution composed of 400 parts of water, 50 parts of naphthenic acid and 50 parts of ammonia of specific weight 0.910. The emulsion obtained having a butter-like consistency can be still more diluted as desired with water. Hard and soft petroleum pitch and coal-tar pitch or mixtures thereof can be worked up in like manner.

In order to emulsify asphalt, coal-tar pitch, petroleum pitch and the like or mix-

tures thereof, I may, however, carry my process into practice by melting together the non-saponifiable components, *i. e.* asphalt or coal-tar pitch, petroleum pitch or mixtures thereof, with the saponifiable components, *i. e.* resin, naphthenic acid, a fatty acid and the like, and bringing about saponification in this mixture at a temperature at or upward of 100° C. by means of dilute fixed alkali or ammonia. The emulsification of the asphalt and the like is brought about not only by the violent stirring, but also by the distributing action of the abundant quantity of steam which is generated. The emulsion which is produced may be diluted as desired with water.

The emulsions described above may be employed for the most various purposes, *e. g.* as paint for insulating walls from external and internal moisture, or for obtaining a dry surface layer on wet walls. The employment of the described emulsion products for the purpose just mentioned has been recognized on the ground that, although a dry wall can readily be protected from exterior moisture by a coating of tar or tar dissolved in light oils, this medium breaks down entirely as soon as it is a matter of making a dry surface on a wall which is itself wet. In this event it is necessary to have recourse to remedies, some of which are very expensive while others do not even reliably fulfil their purpose. If the wall is coated, on the contrary, with a paint of soluble or emulsified asphalt, coal-tar pitch, petroleum pitch and the like or mixtures thereof made according to my above described process, it is possible to insulate every wall, whether wet or dry, from moisture or to produce thereon a dry surface.

The action due to the painting is as follows:—When the first coat is applied the soluble asphalt or the like or the aqueous emulsion penetrates to some extent into the masonry. If the latter is plastered, the saponifiable constituents of the paint combine with the lime and form insoluble lime soaps which in combination with the particles of asphalt firmly close the pores watertight. The paint itself thereby becomes insoluble. When further coats are applied the ammonia contained in the material evaporates with the water, and consequently the new coat becomes insoluble and lies as a lacquer-like layer on the former. Even when the walls are very wet at most four

coats are necessary, two of which are applied on one day, and, if necessary, a dye may be added to the last coat, its action not being thereby impaired. In this manner a
5 firmly adhering, asphalt-like layer which is water-tight and is not very expensive to manufacture is obtained on the wall. Not only all kinds of paints, *i. e.* lime, glue and casein paints and so on, but also wall-papers and the like adhere well on this layer.
10 Also the layer is quite hard so that it does not penetrate through wall papers or the like.

In tests made with my described process
15 it has also been found that the above mentioned naphthenic acids are particularly suitable as a substitute for fatty acids when manufacturing emulsions of solid bodies. The naphthenic acids are not only capable
20 of quite general employment for the purpose just mentioned, but they are very particularly suitable for the emulsification of solid hydrocarbons of the mentioned kind which are non-saponifiable or only saponifiable with difficulty, such as asphalt, coal-tar pitch, petroleum, paraffin, ozocerite, Japan wax, and the like, because the naphthenate ammonia salts tend, even when very greatly diluted, to have a gelatinous consistency and the solid constituents of the emulsion which melt only with difficulty are not precipitated from such emulsions as from very fluid products. It has been found, that, particularly when triturating
30 such emulsion products, the solid constituents are not separated but adhere together.

Naphthenate salts are just as suitable for the emulsification. The naphthenic acid or its salts may be used for emulsification purposes either alone or in combination with
40 other saponifiable substances.

The emulsions of solid hydrocarbons made with the aid of naphthenic acid or its salts may be utilized for very various purposes. Namely, the paraffin emulsion may be employed as the unctuous basis of ointment, the emulsion of ozocerite, Japan wax and the like as polish or wax for polishing floors, or the like, while the emulsions of asphalt, petroleum pitch, coal-tar pitch may be used
50 for making roads.

I claim:—

The hereindescribed process of manufacturing emulsions of solid hydrocarbons, such as asphalt, coal-tar pitch, petroleum pitch,
55 paraffin, ozocerite, Japan wax and the like or mixtures thereof, which consists in melting one or more of the solid hydrocarbons with a saponifiable substance, in heating the mixture thus obtained to a temperature of
60 about or upward of one hundred degrees centigrade, and pouring the hot mixture into a solution of water, naphthenic acid and ammonia while agitating the same.

In witness whereof I have hereunto signed
65 my name, this 8th day of November 1910, in the presence of two subscribing witnesses.

REINHOLD WALLBAUM.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.