UNITED STATES PATENT OFFICE.

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PROCESS OF TREATING WURTZILITE OR ELATERITE AND OF PRODUCING FUSIBLE SOLUBLE PRODUCTS.

No. 864,836. Specification of Letters Patent. Patented Sept. 3, 1907.

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To all whom it may concern:

Be it known that we, WILLIAM F. DOERFLINGER and LEON H. BUCK, both citizens of the United States, residing at Niagara Falls, in the State of New York, have invented certain new and useful Improvements in Processes of Treating Wurtzilite or Elaterite and of Producing Fusible Soluble Products Containing Wurtzilite or Elaterite, and do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to make the same.

Wurtzilite, or elaterite, is the name given by mineralogists to a mineral asphaltic substance which varies in composition but which has certain well known physical characteristics. It is of conchoidal fracture, has a brown streak, is brownish black in color and in pieces thin enough to be translucent, has an orange red brown color by transmitted light. It is tough at ordinary temperatures and is not soluble in alkalies, acids, or the petroleum distillates, except in minute quantities. On account of these properties, it is an ideal substance for use as a coating material to protect structures exposed to the weather, such as buildings, or to the water, such as vessels, but the difficulty of treating it and mixing it with ordinary liquid vehicles, such as turpentine, whereby it may be applied to such purposes, has heretofore rendered its use unpractical.

When heated under ordinary conditions wurtzilite does not melt until a relatively high temperature is reached, but decomposes. We have discovered, however, that when it is mixed before, or at the time of, heating with certain resinous substances it does not decompose but becomes fusible when heated to a comparatively low temperature, say 350° C. and after cooling becomes completely soluble in turpentine and other liquid vehicles whereby it may be applied to the purposes stated. It is necessary that the resinous substance employed should be one which after treatment is itself soluble in the liquid vehicle to be thereafter employed, for instance, it may be gilsonite which is soluble in turpentine without heating, or it may be amber gum, which is not soluble in turpentine until it has been heated.

As a concrete example of the application of our discovery, we may take a suitable quantity of wurtzilite and almost the same quantity of gilsonite and first grind them together to a finely divided state, for instance, so that the particles will pass through a 40 mesh sieve. The mixed powder is then placed in a suitable vessel to be heated.

It is best that the vessel should not be more than two-thirds full and that it should be set away from the direct fire so that it cannot locally be overheated. The vessel should then be heated to about 350° C. and maintained at that temperature for about five hours. With any particular mixture or combination of ingredients this time should be determined by previous experiment. A sufficient time has elapsed, it will be found, when a cooled sample completely dissolves in turpentine free, or nearly free, from insoluble specks.

When the heat is first applied, there is given off a little incondensable gas and then possibly ten per cent. of a volatile liquid which should be caught in a condenser and receiver supplied for that purpose. After this has taken place, very little gas is given off and the upper part of the vessel is always filled with organic vapor which excludes air from the materials acted on. Air has an injurious influence and should as far as possible be excluded.

After the heating operation is completed the vessel will be found to contain a homogeneous liquid. This is then run off and allowed to cool and when it becomes solid it is broken up and is ready to be used in the preparation of the coating material.

Instead of first grinding the wurtzilite and gilsonite and then heating them together, the gilsonite may be first heated and liquefied and the solid wurtzilite then added. This is not different in technical effect from the step described and may under some conditions be preferred.

However the heating is accomplished the gilsonite seems to act as a vehicle for carrying the heat to all parts of the mass of wurtzilite whereby the heat is uniformly distributed and evenly applied to the latter. This causes the wurtzilite to melt at a temperature lower than that heretofore employed to fuse it and with a resulting economy in heat and time.

The product is less decomposed and more elastic than wurtzilite heated alone which, for many purposes, is almost worthless.

The pieces of the compound after cooling are mixed with the proper ingredients to use as a coating material. A good mixture consists of say 100 parts of the compound, 150 parts of turpentine and 25 parts of linseed oil, heated together under conditions of agitation in a suitable vessel until solution takes

place. The liquid is then filtered or otherwise cleared of impurities and cooled. The coating material thus produced is readily applied with a brush, has a high luster, may be diluted as desired, is acid proof and has good wearing properties.

Having described our invention, what we claim as new is:—

1. The process of treating wurtzilite which consists in heating it in the presence of a suitable fusible resinous substance until homogeneous fusion takes place.

2. The process of treating wurtzilite which consists in heating it in the presence of a suitable fusible resinous substance whereby the resultant compound is soluble in turpentine.

3. The process of treating wurtzilite which consists in heating it in the presence of a suitable fusible resinous substance, allowing the compound to cool and dissolving the same in a suitable liquid vehicle, as turpentine, whereby it may be employed as a coating material.

4. The process of treating wurtzilite which consists in heating it in the presence of a suitable resinous substance to a temperature of about 350° C., maintaining it at such temperature with the exclusion of air until a homogeneous liquid is formed and thereafter allowing the same to cool.

5. The process of treating wurtzilite which consists in heating it in the presence of a fusible resinous substance which is soluble in turpentine, allowing the mass to cool after heating, and dissolving the same in turpentine to form a coating material.

6. The process of treating wurtzilite which consists in heating it in the presence of a fusible resinous substance which is soluble in turpentine, allowing the mass to cool after heating, and dissolving the same in turpentine and linseed oil to form a coating material.

In witness whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WM. F. DOERFLINGER.
LEON H. BUCK.

Witnesses:
J. H. SCHERMERHORN,
O. M. DAVIS.