UNITED STATES PATENT OFFICE.

RICHARD S. WARING, OF PITTSBURG, PENNSYLVANIA, AND J. BURROWS HYDE, OF NEW YORK, N. Y.

INSULATING MATERIAL FOR ELECTRIC USES.

SPECIFICATION forming part of Letters Patent No. 267,045, dated November 7, 1882.

Application filed August 17, 1882. (No specimens.)

To all whom it may concern:

Be it known that we, RICHARD S. WARING, a citizen of Pittsburg, Allegheny county, State of Pennsylvania, residing at Pittsburg, and J. BURROWS HYDE, a citizen of the city, county, and State of New York, have invented certain new and useful Improvements in Insulating Material for Electric Uses, of which the following is a specification.

Our invention relates to a composition of matter for the insulation of telegraph-wires; and it consists in utilizing the waste product or residuum of petroleum, when prepared, as hereinafter specified, either alone or combined with earthy or vegetable matter, for insulating purposes.

In the distillation of mineral oils—such as petroleum-oils—a great number of distinct and separate products are produced. The naphtha, illuminative oils, paraffine, &c., are evolved or sent over at varying degrees of temperature, leaving a tarry, waxy residuum in the still. This residuum or distillate is capable of still further reduction, and when so treated various products are "sent over" or produced—such as are known in the market as "black oil," "wax-tailings," "green oil," &c.

In carrying out our invention we take the "residuum of petroleum-oil," as known in the market, and subject it to a further redistillation or to an evaporating process, either of which is well known, so as to drive off all of the volatilizable oils and the paraffine. The process of distillation or vaporization is carried on still further until the proper degree of consistence has been attained. This degree of consistence is determined by the degree of heat to which the material is subjected, or by withdrawing a small portion from the still and allowing it to cool. The products which have been sent over in this redistillation—viz., black oil, which is a viscid mass; wax-tailings, which is of a yellowish brown color and of a soft waxy consistency, termed by us "ambertine;" and green oil, which we term "olivine"—are saved, leaving in the still a fourth product or residuum, which is jet black and somewhat resinous in appearance, closely resembling obsidian, or black volcanic glass, and from its conchoidal fracture, vitreous luster and general appearance we are induced, for convenience, to term it "obsidine." Of these products just enumerated two or more of them are now brought together in varying proportions from that in which they were originally found in the residuum of petroleum, or we may employ the obsidine tempered with a softer material to give flexibility as a first coat to the wire to be insulated, with a second coat of ambertine to obtain a better non-adhesive surface; but for general purposes of insulation we prefer to mix the obsidine and ambertine together, with or without the olivine. These products, either combined or singly, as above stated, are reduced to a liquid state by heat, and the wire, which has been previously covered with cotton, as is usual, is immersed in the heated liquid compound until the cotton has become completely saturated, the hygroscopic water or other moisture expelled therefrom, and the interstices of the cotton filled with the insulating material. A wire thus coated will be found to be flexible to such a degree that it can be wound on a reel and bent in any desired manner without fracture to the coating thereon, and it will besides be water-repellent.

When desired to give greater body to the insulating material, or where a heavier coating is desired on the wires, we add to the liquid product earth, clay, pulp, or other solid proper substances which will not change the chemical qualities of the insulating material.

If the heavier product, obsidine, is to be used alone, it may be tempered or reduced by combining it with hot linseed-oil or other reducing agent.

We are aware that a product has been obtained by the distillation of residuum of petroleum, which resembles in its looks and properties natural asphaltum, and that this product has been used for roofing and paving material, and also for varnish. Such we do not claim.

Having described our invention, what we claim is—

1. An insulating compound for telegraph-wires and electric uses composed of two or

more of the heavier products arising from the redistillation of the residuum of petroleum, as set forth.

2. An insulating material for telegraph-wires and electric uses consisting of the residuum of petroleum freed from paraffine and combined with clay, pulp, or other suitable solid substances, as set forth.

3. An insulating material for electric uses consisting of one or more of the heavier distillates of petroleum-residuum, except paraffine and such as are fluid when cold.

In testimony whereof we affix our signatures in the presence of two witnesses.

RICHARD S. WARING.
J. BURROWS HYDE.

Witnesses:
W. H. CALDREN,
J. W. MARSH.