

# UNITED STATES PATENT OFFICE.

HENRY C. SPALDING, OF BOSTON, MASSACHUSETTS.

COMPOUND FOR INSULATING UNDERGROUND ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 327,477, dated September 29, 1885.

Application filed February 24, 1885. (Specimens.)

*To all whom it may concern:*

Be it known that I, HENRY C. SPALDING, a citizen of the United States, and residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Compounds for Insulating Underground Electric Conductors, of which the following is a specification.

My invention relates to the insulation of electric conductors used in underground and similar systems; and it consists in the combination, with the said conductors, of a permanently-plastic insulating material composed of asphalt and the residuum of the distillation of petroleum, in which the wires are embedded.

In the present systems of underground conductors, and more particularly in those invented by me and described in numerous applications for patents, the wires are inclosed in tubes, pipes, or conduits, the interior space in which around the wires is filled with an insulating compound. It is important that the material used for this purpose should have a certain degree of plasticity, and should never become brittle, as a slight subsidence of the ground in which the pipes are buried, or a displacement of the line of pipes, however slight, from any other cause, would be apt to crack a brittle insulating material and thus impair the insulation. It is also more convenient to use a permanently-plastic compound in order to facilitate access to the wires in case of need.

The material which I employ for surrounding the wires is composed of refined asphalt and the residuum from the distillation of petroleum. These substances I combine by heat in about the proportions of ninety parts of asphalt to ten parts of petroleum residue, and the compound is poured into the conduit around the wires while soft.

The advantages resulting from the use of

this compound are these: Crude asphalt contains certain volatile constituents, which are driven off by the ordinary process of refining. Refined asphalt on cooling becomes very brittle, and for this reason it is not well adapted alone for use in underground conduits. In the distillation of petroleum all the volatile products go over, leaving in the still a non-volatile viscous residue. A small percentage of this added to and mixed with the refined asphalt renders the compound slightly viscous or plastic and preserves it in this condition for a very great length of time. The degree of viscosity or plasticity will of course vary with the relative amount of petroleum residue used; but for ordinary purposes the proportions given above produce the best results.

The compound is comparatively inexpensive and is an excellent insulator. It may be used in any kind of conduit, and with wires insulated or naked. The ordinary methods of applying similar materials may be employed in introducing it around the wires.

Without, therefore, confining myself to the exact proportions here given, to the method of applying or introducing the compound into the pipes, tubes, or other conduits, nor to the character of said conduit, what I claim as my invention is—

As a filling for underground conduits containing electric conductors, an insulating compound consisting of refined asphalt and petroleum residue, substantially as herein set forth.

In testimony whereof I have hereunto set my hand this 24th day of September, 1884.

HENRY C. SPALDING.

Witnesses:

SANFORD H. DUDLEY,  
CHARLES L. SIMMONS.