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THOMAS T. LYMAN, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO H. W. JOHNS-MANVILLE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ELECTRIC INSULATOR.

SPECIFICATION forming part of Letters Patent No. 751,664, dated February 9, 1904.

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To all whom it may concern:

Be it known that I, THOMAS T. LYMAN, a citizen of the United States of America, and a resident of Montclair, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Electric Insulators, of which the following is a specification.

My invention relates to electric insulating materials in general, and more specifically consists of an improved material for producing an insulation against the passage of an electric arc.

In many electric installations conductors carrying heavy currents are separated by narrow spaces and the tendency of the current to arc across the intervening space is difficult to restrain. This is especially so where the circuit between the adjacent conductors is being alternately made and broken by means of a moving conductor alternately thrown into and out of contact with the stationary conductors. My invention produces a material which when interposed between the conductors is most efficient in preventing the formation of such arcs. It is composed of asbestos, plaster-of-paris, and silicate of soda, compressed and vitrified by heat, and with the addition, if desired, of any waterproofing paint or other material applied to the surfaces.

My preferred process of making these insulators or "arc-shields," as they are called in the trade, is the following: Plaster-of-paris is first mixed with an excess of short-fibered asbestos or other fireproof material. The usual proportions are about sixty parts of asbestos to twenty-five parts of plaster-of-paris, by weight. This mixture is treated with a solution of silicate of soda sufficient to render the mass adhesive and self-sustaining. Usually about fifteen parts, by weight, of the silicate of soda is sufficient. It is then molded into a shape approximately that of the finished article and dried. The article so produced is then immersed in a bath of approximately three parts of silicate of soda to one part of water, by weight. After this bath the article

is compressed in a mold and usually again subjected to the silicate-of-soda-solution bath and dried as before. This step in the process may be repeated according to the desired density and hardness of the completed article; but I have found one repetition as above described to be usually sufficient. After the final compression I then "fire" the compressed mass, subjecting it to a degree of heat sufficient to vitrify. This produces a hard and rigid mass of the shape given by the mold, which has the property of resisting and preventing the passage of an electric arc when inserted between the conductors, across which the arc might otherwise tend to establish itself. The sheet or article so formed is then buffed by rubbing with sandpaper, a file, or other abrading means and can be cut, drilled, turned, or otherwise operated on by tools in the usual way to give it the exact form desired. Either before or after this step in the process the article is rendered waterproof by painting it with liquid asphaltum or any suitable waterproofing paint or compound. Preferably the painting is done after the buffing, as that prepares the surface so that the paint will adhere more strongly.

The advantages of the completed article comprise its high resistance to the electric arc, its lightness and rigidity, and the ease with which it can be bored or otherwise worked with tools without splitting, breaking, or chipping.

The proportions of the constituent parts given above could be varied within limits, and other fireproof materials might be substituted for asbestos, so long as the substitute material is fireproof and of sufficiently absorbent nature to take up the silicate-of-soda solution. The purpose of the plaster-of-paris is to give body and rigidity to the article, and other materials might be substituted for or added to the plaster-of-paris to produce this effect.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. As a new article of manufacture, an insulator to prevent the formation of electric

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arcs composed of asbestos, plaster-of-paris, and silicate of soda, vitrified and coated with a waterproofing solution.

2. The herein-described process of producing a material impervious to the passage of electric arcs which comprises the following steps: first, mixing plaster-of-paris with an excess of short-fibred asbestos in a solution of silicate of soda; second, drying the mass, 10 subjecting it to a bath of silicate-of-soda solution and compressing a sufficient number of times to produce the required degree of density and rigidity of the finished product; third, vitrifying the mass by heat.

15 3. The herein-described process of producing a material impervious to the passage of electric arcs which comprises the following steps: first, mixing plaster-of-paris with an excess of short-fibred asbestos in a solution 20 of silicate of soda; second, drying the mass, subjecting it to a bath of silicate-of-soda solution and compressing a sufficient number of times to produce the required degree of density and rigidity of the finished product; 25 third, vitrifying the mass by heat; fourth, buffing the surface of the mass.

4. The herein-described process of producing a material impervious to the passage of electric arcs which comprises the following 30 steps: first, mixing plaster-of-paris with an excess of short-fibred asbestos in a solution of silicate of soda; second, drying the mass, subjecting it to a bath of silicate-of-soda solution and compressing a sufficient number of 35 times to produce the required degree of density and rigidity of the finished product; third, vitrifying the mass by heat; fourth,

buffing the surface of the mass; fifth, painting the surface of the mass with a waterproofing substance. 40

5. The herein-described process of producing a material impervious to the passage of electric arcs which comprises the following steps: first, mixing plaster-of-paris with an excess of short-fibred asbestos in a solution 45 of silicate of soda; second, drying same, and subjecting it to a bath of diluted silicate of soda; third, compressing; fourth, drying; and again submitting to a bath of the silicate-of-soda solution; fifth, again compressing; sixth, 50 vitrifying by heat; seventh, buffing the surfaces of the article produced by the foregoing process.

6. The herein-described process of producing a material impervious to the passage of 55 electric arcs which comprises the following steps: first, mixing plaster-of-paris with an excess of short-fibred asbestos in a solution of silicate of soda; second, drying same, and subjecting it to a bath of diluted silicate of 60 soda; third, compressing, fourth, drying; and again submitting to a bath of the silicate-of-soda solution; fifth, again compressing; sixth, vitrifying by heat; seventh, buffing the sur- 65 faces of the article produced by the foregoing process; eighth, painting the surface of the mass with a waterproofing substance.

Signed at New York this 1st day of April, 1902.

THOMAS T. LYMAN.

Witnesses:

L. R. HOFF,

F. S. WILLIAMS.