104-80. OR 1,574,562 EX board - Impregnated with wax pitch Examine

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IMPREGNATED INSULATION.

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To all whom it may concern:

Be it known that I, GUSTAVE F. DREHER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Impregnated Insulation, of which the following is a specification.

The present invention relates to the treatment of electrical insulating material, and particularly to the impregnation of sheet material, such as asbestos board and artificial stony material such, for example, as the material described in Barringer, Patent No. 1,009,630, Nov. 21, 1911.

Heretofore, asbestos board has been impregnated with asphaltic material. Because of the high viscosity of this material, the impregnation has gone on very slowly, requiring in most cases several weeks of contact of an asbestos board or the like, while the asphalt is maintained fluid at a high temperature. As a consequence of this heating, the flow point of the excess asphalt became so high as to render it useless for subsequent impregnation. Furthermore, a heavy coating of asphalt remained on the asbestos board, which was removable only with great difficulty, as by charring and scraping.

In accordance with my invention I have provided improved insulating articles containing as an impregnant a pitch obtained by heating "still wax" or "petroleum tailings." Also the method of impregnation is rendered more convenient and involves novel features. The time required for impregnation is materially reduced. Other advantages are explained in detail in the following description.

Still wax is a soft, unctuous material, usually of a yellowish color. It remains as a residue in a petroleum still after the more volatile petroleum products have been removed by distillation. Its flow point is just above room temperature.

In carrying out my invention the still wax is heated in an open vessel until its flow point is raised to about 45 to 50° C., a temperature of about 220° C. usually being suited for this purpose. This heat treatment volatilizes the lighter fraction of the still wax and changes it to a black product, which I shall term "stillwax pitch" herein. Asbestos board consists largely of asbestos bonded together with a mineral binder, such as magnesium oxide, or Portland cement. It is used in sheets having a thickness of about 1/8 inch to 2 inches.

The asbestos board, or other porous mineral material, is introduced in a thoroughly dry state into contact with the still wax pitch while the latter preferably is heated to about 220° C. and kept in contact with the still wax pitch until the body of the absorbent material is thoroughly penetrated thereby. When the board has a thickness of two inches about 48 hours are required for this purpose. The still wax pitch then is removed from the board and the latter is heated conveniently in the same container used for the impregnation. The heat treatment which may occur at a temperature of about 220° C. is continued until the flow point of the still wax pitch in the interstices of the asbestos is raised sufficiently to prevent its oozing out at a temperature of about 100° C. Under these conditions the exterior of the asbestos board is substantially clean and free from excess impregnant so that no special cleaning step is necessary before using the impregnated material as electrical insulation, unless special finishes are desired.

The excess still wax pitch which is present at the close of the impregnating treatment and which is removed has had its flow point raised somewhat by being subjected to heating during the impregnation of the asbestos, or other porous material. The desired flow point can be lowered however by adding a suitable amount of still wax having a somewhat lower flow point. The original flow point can be restored in this manner if desired. The restored material may be used for impregnation of the second lot of asbestos board, or the like. This cycle may be repeated indefinitely.

With respect to its electrical insulating properties material made in accordance with my invention is superior to material heretofore made containing asphaltic material. In particular exceptionally good insulating properties are retained in the presence of moisture.

What I claim as new and desire to secure

by Letters Patent of the United States, is:

1. A porous, mineral article permeated throughout with still wax pitch.

2. An asbestos board permeated throughout with still wax pitch.

3. An object consisting of porous mineral material having distributed throughout the mass thereof a still wax pitch which has a flow point sufficiently high to permit said object to be heated to 100° C. without deterioration.

4. The process of impregnating asbestos composition with still wax which consists in modifying said wax by distillation to produce a flow point of about 45 to 50° C. and bringing said modified material into contact with said composition at a temperature of about 220° C. until penetration is completed.

5. The process of impregnating porous material with still wax which consists in modifying said wax by removing the more volatile fraction of said wax by distillation to a predetermined flow point, bringing the material to be impregnated into contact with the modified wax at an elevated temperature for a sufficient length of time to permit penetration of said material, thereupon removing any excess of modified wax and restoring the desired flow point by the addition of wax of lower flow point.

6. The process of increasing the insulating value of asbestos composition which consists in immersing the same in a residue derived by heating still wax in the open and having a flow point of about 45 to 50° C., heating to a temperature of about 220° C. for about 48 hours, removing an excess of impregnating material and thereupon heating said impregnated product to a temperature high enough to increase the flow point of the impregnant.

7. The process of treating porous, mineral objects to improve their physical properties for electrical purposes which consists in impregnating said objects at an elevated temperature with fluid still wax pitch, removing said pitch from contact with said objects and thereupon heating the impregnated objects to raise the flow point of the pitch in the interstices thereof.

8. An electrical insulator comprising a mineral composition containing still wax pitch.

9. The process of impregnating porous mineral articles to render the same waterproof which consists in converting still wax to a pitchy material of materially higher flow point than said still wax and introducing said pitchy material into contact with the article to be impregnated at a temperature of about 220° C. for a sufficient length of time to effect the impregnation, removing an excess of pitchy material and further heating the impregnated article to produce a clean surface condition on the impregnated article and to increase the flow point of the impregnated material.

In witness whereof I have hereunto set my hand this 7th day of June, 1923.

GUSTAVE F. DREHER.

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