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ALEXANDER WINOGRADOFF, OF NEW YORK, N. Y., ASSIGNOR TO IMPROVED OFFICE PARTITION CO., OF ELMHURST, LONG ISLAND, NEW YORK, A CORPORATION OF NEW YORK.

FIRE-RESISTANT FIBROUS MATERIAL AND METHOD OF PRODUCING THE SAME.

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The object of my invention is to produce a fire resistant fibrous material by the treatment of a combustible fibrous material with a liquid mixture of a solution of a water soluble magnesium salt, such, for instance, as magnesium sulphate and a solution of a water soluble bicarbonate, such, for instance, as potassium bicarbonate; the so treated fibrous material even when exposed to the elements retaining its fire resistant qualities, thereby rendering the treated fibrous material suitable alike for outside or inside use.

Presupposing magnesium sulphate and potassium bicarbonate are to be used to produce the liquid mixture for treating the combustible fibrous material, a solution of the magnesium sulphate is mixed with a solution of the potassium bicarbonate at normal room temperature (about 20° centigrade) and the resultant mixture will be a water clear liquid which will remain without reaction for a reasonable time so long as the mixture is kept at normal room temperature.

In treating combustible fibrous material, such, for instance, as wood, to render it fire resistant, the fibrous material is treated with the liquid mixture at substantially its normal temperature. After this treatment the fibrous material is subjected to heat, thereby releasing carbon dioxide and precipitating magnesium carbonate, which precipitate will render the fibrous material substantially permanently fire resistant even if the material is exposed to the elements, thus rendering the material suitable for outside as well as inside use.

As an example: I prepare a mixture of a 15% solution of magnesium sulphate with a 10% solution of potassium bicarbonate (by dissolving 300 gr. $MgSO_4.7H_2O$ in one litre of cold water and 200 gr. $KHCO_3$ in one litre of cold water and mixing them together at ordinary room temperature). This water clear liquid mixture is then used, while still cold, to treat the combustible fibrous material, such as wood, for example, by impregnating the same under heavy pressure in a closed chamber so that the liquid mixture will be well distributed throughout the material. The impregnated fibrous material may then be subjected to heat (preferably at a temperature of from 30° to 60° centigrade) in a kiln, thereby liberating carbon dioxide and precipitating magnesium carbonate throughout the material being treated, which precipitate renders the treated fibrous material fire resistant even when the material is exposed for considerable periods, to the elements.

Other water soluble magnesium salts which might be used are magnesium chlorate and magnesium nitrate and other water soluble bicarbonates which might be used are sodium bicarbonate and ammonium bicarbonate.

What I claim is:—

1. Treating combustible fibrous material with a mixture of a solution of a water soluble magnesium salt and a solution of a water soluble bicarbonate and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

2. Treating combustible fibrous material with a mixture of a solution of magnesium sulphate and a solution of a water soluble bicarbonate and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

3. Treating combustible fibrous material with a mixture of a solution of a water soluble magnesium salt and a solution of potassium bicarbonate and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

4. Treating combustible fibrous material with a mixture of a solution of magnesium sulphate and a solution of potassium bicarbonate and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

5. Impregnating combustible fibrous material with a mixture of a solution of a water soluble magnesium salt and a solution of a water soluble bicarbonate under pressure and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

6. Impregnating combustible fibrous material with a mixture of a solution of magnesium sulphate and a solution of a water soluble bicarbonate under pressure and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

7. Impregnating combustible fibrous material with a mixture of a solution of a

water soluble magnesium salt and a solution of potassium bicarbonate under pressure and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

8. Impregnating combustible fibrous material with a mixture of a solution of magnesium sulphate and a solution of potassium bicarbonate under pressure and subsequently heating the material to precipitate magnesium carbonate and thereby render the material fire resistant.

In testimony, that I claim the foregoing as my invention, I have signed my name this 9th day of December, 1926.

ALEXANDER WINOGRADOFF.