

UNITED STATES PATENT OFFICE.

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PROCESS OF RENDERING PAPER OR TEXTILE FABRICS WATERPROOF.

SPECIFICATION forming part of Letters Patent No. 540,164, dated May 28, 1895.

Application filed May 9, 1894. Serial No. 510,634. (No specimens.)

To all whom it may concern:

Be it known that we, EUGEN HORNUNG and RUDOLF LIEBL, subjects of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Processes of Rendering Paper and Textile Fabrics Waterproof; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a process having for its object to render paper or textile fabrics water-proof in such a manner that they always retain the said property, even if continually exposed to moisture, and constantly remain pliant and elastic.

In comparison with paper and fabrics impregnated or coated with caoutchouc these materials treated according to our process possess the advantage of their durability and the absence of any smell.

In order to work this process, glue is dissolved as completely as possible in water or any other glue-dissolving liquid, with addition, of some tungstate of soda ($\text{Na}_{10}\text{W}_{12}\text{O}_{41}$) to increase the toughness. The glue is then precipitated from that solution by means of tannin or of any other suitable precipitant, in the shape of a tough mass insoluble in water. This composition, which, in its wet state, is elastic and plastic, becomes hard and very brittle when dry, so that in such a state it would be quite unsuitable for coating purposes. For this reason the said composition is melted in a vessel, preferably before it hardens, and addition is made to it, separately or in suitable mixture, of glycerine, sirup, molasses, or grease or oil. The quantity of this additional matter varies according to the desired degree of pliability, and is

preferably one half of the quantity of the treated mass of glue, obtained by precipitation. The composition prepared in this manner, is applied, before it hardens, on the paper or fabric, and forms a very pliant coating, insoluble in water and similar to caoutchouc.

In order to render the paper more durable, a fabric can be pressed on to it immediately after it has been coated, or two strips of paper thus prepared can be pressed on to the two sides of a fabric. It is obvious that this additional fabric, before it is combined with the paper, may be coated with the said composition; or the combined material formed of fabric and paper may be subsequently coated or impregnated with the said composition.

In order to increase the impermeability and to improve the brilliancy and appearance of the product, a second coating of any waterproof varnish or lacquer is finally applied on the paper or fabric.

If it is desired to color the paper or fabric, the coloring matter is added at will either to the first or to the second coating substance.

We claim as our invention—

The herein described process of rendering fabrics impervious to moisture, the same consisting in dissolving glue in a suitable liquid containing tungstate of soda, adding a precipitant to the solution, melting the precipitate and adding thereto a substance such as glycerine or the like to secure pliability, and finally coating the fabric with the substance before it hardens, substantially as described.

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

EUGEN HORNUNG.
RUDOLF LIEBL.

Witnesses:

F. BELMONT,
JOSEF ZEHTNER.