Patented Nov. 24, 1931 1,833,715

UNITED STATES PATENT OFFICE

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WATER PROOF POLISHING PAPER

No Drawing. Application filed August 31, 1927, Serial No. 216,773, and in Germany September 10, 1925.

This invention has reference to water proof polishing paper and the like for the polishing and smoothening of coats of paint and the like by means of which the finishing operation in the application of coats of paints is greatly facilitated and accelerated, and the quality of the product is greatly improved. For the purpose of polishing or grinding for instance coats of varnishes, paints, filling coats and the like it is common to employ pumice stone with an addition of water. In order to facilitate and accelerate the polishing operation, polishing or burnishing paper or the like may be employed, and in order to be able to employ this kind of carriers provided with grinding and polishing material applied thereto by an adhesive, in the presence of water, such carriers with the coats applied thereto should be manufactured in such a manner that a water-proof product is obtained, that is to say, that for instance in the case of the use of paper the disintegration thereof is prevented and the granular treating material, such as glass, emery, garnet, carborundum is not readily detached from the carrier, such as paper, cloth, wood and the like.

Now in accordance with this invention a water-proof polishing or grinding sheet, paper or the like in which the polishing or grinding agent is secured to the base by a binding agent, such as animal glue or the like, is obtained by hardening the glue by liquid condensation products of phenols or the like with formaldehyde or the like, that is to say, with those products which are formed in the first stages of the well-known condensing processes or by such condensation products of the class referred to which are mixable with solvents.

The animal glue having been dissolved or soaked in water, and before being applied to the base, is mixed with the condensation products at a temperature which should not exceed 75 (seventy-five) degrees centigrade, so as to avoid the liability of a premature hardening of the glue. This mixture is applied as a coating to the paper or an equivalent carrier, and the grinding or polishing material is strewn on the surface. If required, a subsequent gluing is effected, and then the product is gradually heated to a temperature not exceeding 150 (one-hundred-and-fifty) degrees centigrade, and preferably kept at 120–130 degrees centigrade.

The heating is so arranged as to extend over a relatively long period of time, say for instance 10 to 36 hours, and the temperature, starting with about sixty (60) degrees centigrade is gradually increased, so that it is raised to 100 to 130 degrees centigrade during the last 6 hours. By this heating process the glue is hardened as a result of the influence of the condensation product and becomes entirely water-proof.

The subsequent gluing or sizing before the hardening operation may also be effected without the use of glue and merely by means of the phenol-formaldehyde condensation product which, if desired, may be diluted with alcohol.

In applying the glue alcohol may be used as a diluent, and glycerine or linseed oil or any other diluent may be added to the mixture. If paper is used as a base, it is preferably previously impregnated with linseed oil and dried. After the glue has been applied to the carrier base, and the polishing or grinding agent has been strewn upon it, and after any possible subsequent gluing or sizing has been effected, the product is dried in the manner referred to.

Example. 100 liters of a solution or of a soaked mixture of 1 part of glue in 5 parts of water are heated with 5 liters of glycerine and 8 liters of linseed oil to about 75° C. The condensation product of phenol and formaldehyde is diluted with alcohol sufficiently to have about the same viscosity as the glue, and is heated to about 50 degrees centigrade. Thereupon about 15 liters of the condensed mixture are cautiously introduced with constant stirring into the glue, while care is taken to avoid a rise of temperature above 75° C. This glue is applied to the paper or a similar base, and the grinding or polishing agent is sprinkled upon it. For the subsequent gluing or sizing a mixture of condensation product of somewhat different composition is preferably employed, thus for in-

stance 100 liters of liquid condensation product, 150 liters of alcohol and 15 liters of glycerine. The hardening is then effected by drying in the manner indicated.

Instead of 8 liters of linseed oil for each 100 liters of glue-solution a smaller quantity may be used, and, if required, the use of linseed oil may be entirely dispensed with; but in such case it is advisable to increase the addition of glycerine, thus for instance up to about 10 liters.

The linseed oil and other fats and oils serve not only for the impregnation of the carrier base, but on the other hand also for reducing the amount of the condensation product, which latter, however, constitutes always the hardening agent proper. The presence of glycerine decreases the brittleness, and it also acts as a diluent for the glue, aside from or in addition to the diluting action of the alcohol.

It should of course be understood that the broad features of this invention are not restricted to the particular details herein described by way of exemplification and illustration only, but the principle of the invention admits of modifications and changes within the scope and spirit of the invention, as defined in the appended claims.

What I claim is:—

1. The method of manufacturing substantially waterproof abrasive sheets which comprises applying a mixture of glue, unsolidified phenol-aldehyde mixture and an alcoholic diluent to a carrier base at a moderately high temperature of about 75° C., applying an abrasive to the layer obtained on the carrier base, covering the resulting layer with liquid organic sizing material, and then gradually raising the temperature of the coated carrier base to a solidifying temperature of about 150° C. during a period of from about 10 to 36 hours.

2. The method of manufacturing substantially waterproof abrasive sheets which comprises applying a mixture of glue and unsolidified phenol-aldehyde mixture at a moderately high temperature substantially not above 75° C. to a carrier base, then applying an abrasive to the layer obtained on the carrier base, then applying to the resulting mixture a second layer of unsolidified phenol-aldehyde mixture and organic alcoholic diluent, and finally raising the temperature of the coated carrier base gradually to a maximum of about 120 to 130° C.

3. The method of manufacturing substantially waterproof abrasive sheets which comprises heating an aqueous solution of glue with an excess of glycerine and linseed oil to about 75° C., adding a moderately heated, unsolidified phenol-aldehyde mixture, applying the resulting mixture to a carrier base, applying an abrasive to the layer obtained on the carrier base, covering the abrasive with a mixture of liquid phenol-aldehyde condensation product, alcohol and glycerine, and then raising the temperature of the coated carrier base to a maximum of about 150° C. and baking the different layers.

In testimony whereof I have affixed my signature.

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