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MANUFACTURE OF PAPER FOR PHOTOGRAPHIC PURPOSES.

No Drawing.

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To all whom it may concern:

Be it known that I, EDUARD SCHLOEMANN, subject of the German Republic, residing at Duren, Rheinland, Germany, have invented certain new and useful Improvements in the Manufacture of Paper for Photographic Purposes, of which the following is a specification.

The invention relates to improvements in the manufacture of paper for photographic purposes. In order to make ordinary paper suitable for the purposes of the photographic industries they are coated with a suspension of sulphate of barium (blanc fixe) in gelatine, glue, casein or similar binders. This coating serves a double purpose. On the one hand it prevents the infiltration of the photographic emulsion (bromide of silver gelatine) into the fibre of the paper and on the other hand it protects the photographic emulsion against the action of impurities contained in the paper, which owing to their chemical action may have a disturbing effect upon the picture during the subsequent development.

The treatment of the paper is carried out in the following manner. Pulverized heavy spar or precipitated sulphate of barium in the dry state or as a dough is mixed with a binding agent and this mixture is applied to the paper by means of a spreading machine.

This invention consists in bringing together Ba-ions on the one hand and SO_4 -ions on the other hand in the presence of a protective colloid and maturing the emulsion of sulphate of barium so produced in gelatine, preferably at higher temperatures, in order to obtain a certain size of grain. After this size of grain has been attained the maturing process is discontinued, the stiff mass is granulated, washed and after re-melting applied to the raw paper, the protective colloid acting at the same time as binding medium.

The improved process is distinguished from the old process described in the preamble by the fact that by the employment of pure raw materials (for instance chloride of barium, chemically pure sulphate of ammonia and purified gelatine as protective colloid) after washing out the sulphate of barium gelatine and completely removing the products of conversion a barium coating is obtained, which in regard to purity satisfies the highest requirements and is there-

for of the greatest importance for the manufacture of highgrade photographic paper. By means of the improved process an easy and absolutely uniform distribution of the sulphate of barium in the binding agent is furthermore possible, as the sulphate of barium forms itself by the admixture of two solutions in the binding agent acting as protective colloid. It is also of importance in the improved process that owing to the maturing, the sulphate of barium may be produced in any size of grain. The crude mechanical granulation of the heavy spar or the precipitated sulphate of barium of the known process is replaced by the far exacter operating colloid-chemical maturing process, in which the original concentration of the brine, the presence of other electrolytes, the kind and concentration of the protective colloid, as well as the time and the temperature are the factors, which are of influence for the size of the grain to be obtained.

The following may serve as an example for the carrying out of the process: with a heated solution of 500 gr. chloride of barium in 10 litres of 20% watery gelatine is mixed a solution of 300 gr. sulphate of ammonia in 2.5 litres of water and the mixture is allowed to mature at a raised temperature (approximately at 50 to 70°) until a certain size of grain is obtained. If no importance is attached to a coarse grain, the maturing stage may be omitted and an emulsion of colloidal distributed sulphate of barium in gelatine is obtained.

The emulsion is allowed to stiffen, is then granulated according to the methods customary in the photographic industries and washed until the water produces no longer any chemical reaction upon the salts of conversion.

The emulsion thus purified is melted and applied to the paper. To this mass may be added, as required, further quantities of gelatine or of another binding agent (glue, agar, casein or the like).

What I claim as my invention and desire to secure by Letters Patent is:—

1. In the process for the manufacture of paper for photographic purposes the production of a coating emulsion of sulphate of barium, which consists in bringing together Ba-ions and SO_4 -ions in the presence of a protective colloid.

2. In the process for the manufacture of

paper for photographic purposes the production of a coating emulsion of sulphate of barium, which consists in bringing together Ba-ions and SO_4 -ions in the presence of a protective colloid and allowing said emulsion of sulphate of barium to mature until a certain size of grain is obtained.

3. In the process for the manufacture of paper for photographic purposes the production of a coating emulsion of sulphate of barium, which consists in bringing together Ba-ions and SO_4 -ions in the presence of a protective colloid, allowing said emulsion of sulphate of barium to mature until a certain size of grain is obtained, granulating the stiff mass, washing and re-melting it.

4. The process for the manufacture of paper for photographic purposes, which consists in coating raw paper with an emulsion of sulphate of barium in a binding medium, said emulsion being obtained by the sulphate of barium being produced in the binding medium by bringing together Ba-ions and SO_4 -ions.

5. The process for the manufacture of paper for photographic purposes, which consists in mixing a heated solution of 500 gr. of chloride of barium in 10 litres of 20% watery gelatine with a solution of 300 gr. sulphate of ammonia in 2.5 litres of water, allowing said emulsion of colloidal distributed sulphate of barium in gelatine to stiffen, granulating, washing, re-melting and applying it to the raw paper.

6. The process for the manufacture of paper for photographic purposes which consists in mixing a heated solution of chloride of barium in watery gelatine with a solution of sulphate of ammonia in water, allowing said emulsion to mature at raised temperatures until a certain size of grain is produced, cooling said emulsion until it stiffens, granulating, washing, re-melting and applying it to the raw paper.

In testimony whereof I have signed my name to this specification.

EDUARD SCHLOEMANN.