

UNITED STATES PATENT OFFICE.

IGNAZ HOFFSÜMMER, OF DÜREN, GERMANY.

PROCESS FOR MAKING PHOTOGRAPHIC PAPERS.

No. 828,652.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed February 15, 1906. Serial No. 301,309.

To all whom it may concern:

Be it known that I, IGNAZ HOFFSÜMMER, manufacturer, a subject of the German Emperor, residing at 11 Schenkelstrasse, Düren, Rhine Province, Germany, have invented new and useful Improvements in Processes for Making Photographic Papers, of which the following is a specification.

Patent No. 812,204, granted to me on February 13, 1906, relates to a process for making photographic paper, the chief feature of which consists in a fibrous protective covering, for instance, of thin paper, fabric, and the like, being spread over the raw paper, which covering prevents the penetration of the emulsions into the raw paper, so that a raw paper of inferior quality may be selected for the foundation covered with the protective layer.

Now this invention relates to an improvement on the said patent.

In order that the thin upper paper layer may perform its function of serving as a protective covering, it must be of such a density that the emulsion cannot reach the lower layer of paper through the upper thin paper layer. Now for many purposes it may be desirable not to entirely prevent the penetration of the emulsion into the upper paper layer serving as protective covering, but, on the contrary, to allow it to penetrate up to a certain degree. In this case a photographic defect or impurity of the upper layer of paper would lead to a rapid destruction of the picture produced on such paper or would, indeed, make the pictures defective in appearance from the first. In order to prevent this, by the present invention the thin upper layer of paper is made of photographically-pure paper material. It is not in this case necessary that the thin photographically-pure upper paper layer shall alone serve as a protective covering. On the contrary, this upper layer of paper may be assisted in its action by further protective layers of any suitable kind, which are applied either in the ordinary manner on the upper surface of the paper before or after its combination with the under paper or which are embedded between the two layers of paper. Even if it is already known to spread on the surface of the photographically-pure paper protective coverings an important difference exists in the present instance as to whether the protective covering on the surface of the paper be applied before or after its combination with the under

paper—that is to say, whether the photographically-pure paper is first combined with the under inferior paper and then coated or whether the photographically-pure paper serving as the protective covering is first itself coated with the usual layers (baryta layer, emulsion layer, and the like) and then combined with the lower inferior raw paper. This latter way would, for instance, be adopted when heavy photographic cardboards are to be made, which offer many difficulties to the treatment with baryta and the emulsion, for instance, the difficulty that in consequence of their thickness and stiffness they do not easily follow the rollers and only pass with difficulty over the drawing-table and the rolling-machine, while in the case of lighter cardboard or papers these difficulties no longer exist or exist only to a small extent. In this case, therefore, it is preferable to first treat with baryta the upper photographically-pure paper serving as protective cover by itself alone and then after it has been subsequently also emulsioned combine it with the under raw paper. If, further, for obtaining matte pictures, which extend into the substance of the paper, the photographically-pure protective paper be employed only slightly sized or even unsized, the coating of the protective paper itself alone must take place before its combination with the under foundation-paper. Otherwise the adhesive substance—such, for instance, as starch—which combines the two papers, may penetrate so far into the protective paper that the intended effect of producing a matte sunken-in picture would be more or less not attained, as the pores (which are purposely left partially or entirely open) of the slightly-sized or unsized protective paper would then be filled with the adhesive substance. This can, however, not take place if the pores of the protective paper be already filled with the constituents of the coating before the protective paper is combined with the under raw paper. It is thus possible to obtain a matte picture.

An example will now be described for the case where the further protective layer is to be embedded between the two layers of paper. Such a further protective layer embedded between the two layers of paper may, for instance, consist of resin, (in combination with other substances, if desired,) which is introduced between the papers, as resin, as is well known, is repellent or impermeable to

light sensitive emulsions and therefore prevents them penetrating to the lower paper. Other substances adapted to the same object are starch, gelatin, casein, baryta, chalk, 5 glass, collodion, celluloid, gutta-percha, and the like, and all substances in general which when spread either alone or in special preparations or with suitable adhesives on a paper foundation may serve as impermeable or partially-impermeable emulsion-carriers or which 10 in consequence of special treatment receive the properties of such emulsion-carriers. Substances are also applicable for the intermediate protective layer, which, if directly 15 employed as emulsion-carriers, would prevent the sinking in of the emulsions, but by reason of peculiar physical properties, for instance, by reason of peculiar color or their special chemical behavior relative to the 20 light sensitive layer, for instance, by containing acid, would have a deleterious action and yield unacceptable pictures. These drawbacks cannot arise in the present case or at any rate not to the same extent, as over the 25 intermediate protective layer there is a pho-

tographically-pure paper. As the intermediate protective covering between the two layers of paper there may also be employed, if desired, a fabric or the like of suitable material. By the use of such materials as intermediate protective covering papers may be 30 made the upper layer of which consists of photographically-pure paper and has a very open texture, so that matte pictures result.

Having now particularly described and 35 ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

A process for making photographic papers consisting in applying a protective coating to 40 the raw paper and applying a layer of photographically-pure paper to said protective coating.

In testimony whereof I have signed my name to this specification in the presence of 45 two subscribing witnesses.

IGNAZ HOFFSÜMMER.

Witnesses:

BESSIE F. DUNLAP
LOUIS VANDORN.