UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC PRINT.

SPECIFICATION forming part of Letters Patent No. 725,525, dated April 14, 1903.

Original application filed March 25, 1902, Serial No. 99,956. Divided and this application filed September 13, 1902. Serial No. 123,295. (Specimens.)

To all whom it may concern:

Be it known that we, HAWLEY C. WHITE and HARRIE C. WHITE, of the village of North Bennington, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Photographic Prints; and we hereby declare the following to be a specification thereof.

This invention relates to improvements in stereoscopic prints themselves, and especially to improvements in the surfaces thereof, and is a division of our application, Serial No. 99,956, filed March 25, 1902, for improvements in the art of producing and mounting stereoscopic prints, the reason for such division being to make the process and product the subject-matter of separate applications.

As a description of the method or process of producing the subject-matter of this application aids a better understanding thereof, it is here repeated.

This invention relates to the product resulting from an improved method of mounting stereoscopic prints on stiff card-mounts and finishing the faces thereof by a specially-manipulated ferrotype process, whereby the finished surfaces of the prints are materially changed in appearance and greatly improved and the production of ferrotyped stereoscopic prints on stiff mounts has been rendered feasible.

Our invention comprises the following novel features, viz: a special order for the various steps involved in carrying out our improved process of mounting and finishing, the use of pressure at certain stages of the process, and a new and improved surface on the face of the finished print.

Our invention is applicable to such photographic papers as are coated with some substance like gelatin, which when wet or moistened will stick to a ferrotype-plate or analogous surface.

Our process or method is carried out as follows: The prints are first wet, preferably in tepid water, and piled one upon another. Superabundant water is disposed of by gentle pressure on the pile or by allowing the pile to drain. This permits the coating to soften and expand as much as it will. When thoroughly and evenly moistened in this way, the backs are spread with any suitable adhesive substance and the prints are adjusted in correct position on a card-mount. Then a ferrotype or equivalent plate is laid upon the face of the print with its enameled side against the coating. The assemblage is then passed between rollers to close the surfaces together and secure complete adhesion of the print both to the plate and to the card. Next the assemblage, which for brevity may be called a "pack," is confined under pressure in some sort of a clamp until the adhesive matter has set and the moisture of the print has diffused itself evenly throughout the print and the card. This step in the process occupies considerable time, according to the degree of moisture to be dissipated, the porosity of the card, and the degree of pressure employed. Ordinarily a considerable number of packs are pressed at once. This step in the process of pressure under confinement exerts a distinctive influence on the result and tends to produce a particularly characteristic surface on the finished print, as will be hereinafter more fully explained. Following the pressure after removal from the press or clamps the packs are separately confined by their edges to prevent curling or warping, and slowly dried, preferably in a kiln under a moderately-hot blast. This final drying hardens the coating of the prints, and when entirely dry the plate readily separates from the print, leaving a surface which is a perfect counterpart of the surface of the plate.

The surface of the print resulting from the above-named treatment presents a very peculiar appearance, due to the peculiar nature of the surface of the enamel on the plate. If the plates are properly treated in their manufacture, the enamel will dry and harden with a lustrous surface; but if it is microscopically examined it will be seen that it shows a finely-wrinkled surface, made up of an infinite number of minute waves, elevations, and pits or depressions of a confluent character, a surface papulose in character resembling the finest kind of stipple. It is unlike the surface of a fluid at rest or of flowing varnish or of blown glass, either of which presents no unevenness, but is a perfect plane. Hence the confinement of the pack in the press while the coating of the paper is soft and yielding

has the effect of sinking the surface of the coating to the bottom of every depression or pit in the surface of the enamel of the plate. The separation of the plate from the print leaves a reversed impression on the surface of the print, which consists of like innumerable and imperceptibly-minute raised points and sunken depressions. This surface differs radically from that produced by imposing a coated print upon a ferrotype-plate and permitting it to dry thereon unconfined and without pressure until it separates. Where a print is ferrotyped in the ordinary way and allowed to dry naturally and uncompressed, the surface produced is so smooth and glassy that it is unsuited for stereoscopic work—that is to say, the print can be viewed in the stereoscope satisfactorily only in such positions as will avoid reflections of light, the flashing reflections which are characteristic of such a surface being very trying to the eyes. The exquisitely-minute irregularities of our improved surface diffuse and divert by reflection many rays of light from entering the eyes. Hence our improved surface is entirely free from all superficial distortions, such as defects in the card-mount which show through the print, traces of burnishing-rollers, traces of fiber adhering to the print from using blotting-paper to dry off the face of the print after wetting it preparatory to mounting, &c. All this is due to the unyielding character of the ferrotype-plate and the fact that the press firmly holds the face of the print at all points in perfect contact therewith until the pack has dried out sufficiently for all contacting parts to have set beyond the tendency to buckle or swell from moisture in the card.

A distinguishing characteristic of our improved surface is that when viewed through the stereoscope all evidences of the plane of the picture disappear and an extremely clear and brilliant atmospheric effect is secured. No traces of the treatment of the print or evidences of its mounting or defects of the card are visible, as is the case where the prints are moistened, pasted, stuck to the card, allowed to dry, and are then finished with the burnisher.

It will be seen that our process differs from any prior method in the respect that compression of the pack enters into it as a step which contributes to a more highly finished result. The reflections, if any, are softened, and the whole tone of the print is mellowed down, so that when viewed through the stereoscope the impression of looking out into the open air is vivid. By other modes of finishing the surface is impaired in many ways, as by the use of blotters, the burnisher, and the uneven expansion and buckling of the surface of the print and the card.

It is not thought that the process of ferrotyping stereoscopic prints has hitherto been accomplished in a way to make it a commercial success. This is on account of difficulties connected with the pasting process. If the print was wet and then imposed on the plate, the paste would have to be carefully applied, so that it would not run over the edge of the print onto the face of the plate, for if this happened when the print was applied to the card-mount if it was then submitted to pressure, as in a press, any paste which might be squeezed out from under the print would adhere to the plate and dry there, so that when the plate was separated from the card either the face of the card around the edges of the print would be spoiled and daubed with paste, or if it adhered to the plate when separation took place the surface of the card would be ripped up around the picture, either of which conditions would spoil the view. This method is also so slow that it cannot be used on a commercial scale. The well-known method of wetting and imposing the print on a ferrotype-plate, then pasting its back, and applying paper or cloth to the back, which is in common use and works fairly well for certain purposes where a flexible backing is required, is not adapted to use with stiff inflexible cards, which will warp the moment they are moistened on one side, for when so moistened they will curl and throw the plate off before the pack would dry and the face of the picture would be ruined.

Thus it appears that the print resulting from the operation possesses a new face differing distinctively from any produced by any process now in use in having a refined granular or stippled surface, which is a perfect reflex of the surface of the enamel of the ferrotype or other like plate which is used in its production. Although its face, broadly speaking, is a plane, and therefore possessing a certain degree of luster, yet it is not a glassy or strictly polished surface, but gives off a mellow, softened, and diffused reflection, which is plainly perceptible to the eye and is distinctly characteristic. This surface is therefore finely wrinkled or irregularly corrugated and is uniformly or nearly uniformly lustrous.

We therefore claim—

1. An emulsion photographic print, having a wrinkled face, which is uniformly lustrous.

2. An emulsion photographic print, mounted on a stiff base, and having a wrinkled face, which is uniformly lustrous.

3. A photographic print, having a wrinkled face, which is uniformly lustrous.

4. A photographic print, mounted on a stiff base, and having a wrinkled face, which is uniformly lustrous.

In testimony whereof we have hereunto subscribed our names, at North Bennington, Vermont, this 22d day of August, A. D. 1902.

HAWLEY C. WHITE.
HARRIE C. WHITE.

Witnesses:
AGNES R. WHIPPLE,
GRACE L. NEWTON.