



# UNITED STATES PATENT OFFICE.

JOHN E. THORNTON AND CHARLES F. S. ROTHWELL, OF MANCHESTER, ENGLAND, ASSIGNORS TO JOHN OWDEN O'BRIEN, OF MANCHESTER, ENGLAND.

## TRANSPARENT-PAPER STRIPPING-FILM FOR PHOTOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 786,534, dated April 4, 1905.

Application filed March 6, 1900. Serial No. 7,542.

*To all whom it may concern:*

Be it known that we, JOHN EDWARD THORNTON and CHARLES FREDERICK SEYMOUR ROTHWELL, subjects of the Queen of Great Britain, and residents of Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Transparent-Paper Stripping-Films for Photographs, of which the following is a specification.

The object of this invention is to provide a new or improved transparent film for photographic purposes, whereby a transparent-paper base is combined with a removable or strip-able film during manufacture and may remain so combined, if desired, throughout the various stages or operations of development—fixing, washing, drying, and varnishing—and yet may be removed or separated from each other afterward or at any desired time.

We are well aware that photographic films have been made with transparent paper as a base; but in every such instance it has been unremovable and remains a permanent part of such film; but it is very objectionable, as on all prints or pictures obtained from negatives on such films the grain of the paper has been reproduced and been more or less visible in the print, and the presence of the paper in the finished film has also increased the time necessary to obtain prints from such negatives. We are also well aware that many stripping-films have been used; but in every case the film has been prepared or built up on a backing of strong thick white and comparatively opaque paper, which on account of its opacity renders it very difficult for the operator to judge the density of the negative or picture when developing by the feeble red light of the dark room.

Our invention consists, essentially, in constructing or building up a stripping-film upon a transparent-paper base, whereby a perfectly new and improved technical result is obtained and a photographic film produced which is a great practical advance upon any hitherto known, as it combines all the advantages of a stripping-film, with the additional one of enabling the operator to judge the density of

the negative almost as easily as with a transparent-glass plate or celluloid film.

The drawings show a perspective of the film. Figure 1 shows a stripping-film comprised of three layers, and Fig. 2 shows a stripping-film comprised of four layers.

In carrying out the invention we take a transparent paper A, produced or prepared in any of the ways now well known in the art, such as by treating paper with oil, varnish, gum, or other like substances. The paper is then rolled and glazed before use. The transparent paper forming the base of the film is next coated with a transparent stripping medium or substance B, which will render the film, formed of gelatin C and sensitive emulsion C', capable of being stripped or removed after the picture has been obtained thereon.

The transparent stripping medium B may be one of the following or other suitable substances: (a) a compound or substance prepared by dissolving the aluminium or zinc salts of fatty or resin acids (or a mixture of these salts) with a light hydrocarbon solvent, such as benzene or coal-tar naphtha, and then solidifying by drying; (b) rubber solution; (c) solution of rubber followed by collodion; (d) solution of shellac or hard resinous varnish; (e) a cement soluble in water or other solvents, such as soluble gelatin. We prefer to employ the first-named substance as the stripping medium, as this we find gives much the best technical results.

A point of great importance is that the sensitive film C should adhere to the transparent-paper base A during all the operations until finally dried and that it should then or at any subsequent time be easily removable, and this we fully attain by the use as a stripping medium of the substance prepared by dissolving the aluminium or zinc salts of a fatty or resin acid, then solidifying the same. We prefer to use the aluminium salts of palmitic, oleic, stearic, or resin acids. The transparent paper A for the base when coated or treated with this material is rolled or calendered until the surface is perfectly smooth and free

from grain. The object of the smooth surface is to leave the film C on removal from the transparent-paper base A with the highest possible degree of transparency and freedom from grain-markings. The film C itself is built up on the transparent-paper base A on top of the stripping medium B by coating the same with insoluble gelatin, celluloid, or similar substances and finally coating the same with the sensitive emulsion C' to the required degree. A film formed upon such a prepared transparent-paper base A can be removed therefrom with the greatest ease by simply pulling the film C and paper apart with the fingers, no heat nor solvents being necessary. Moreover, the film never comes off without being pulled and never fails to come off when desired.

A film prepared as described has the following advantages over those hitherto known: It is thin, light, and strong. It is sufficiently transparent to enable density to be easily and correctly judged in the dark room. It does not cockle before, during, or after development and can be dried flat. The film itself can be easily and with certainty stripped from the temporary backing.

Transparent-paper films manufactured in the way described may be employed for various purposes—such as for rapid or slow gelatino-bromid emulsion for development, gelatino-chlorid emulsion for printing out or for development, also for negatives, cinemato-

graph-positives, lantern or window transparencies, and other purposes.

What we claim as our invention, and desire to protect by Letters Patent, is—

1. A transparent stripping-film for photographic cameras comprising in its construction a transparent smooth paper base, a layer of a transparent stripping medium coated upon the paper, a layer of transparent insoluble material coated upon the stripping medium, and a layer of transparent sensitive emulsion coated over the stripping medium, substantially as described.

2. A photographic stripping-film comprising in its construction, a base of transparent paper, a stripping medium of a salt of fatty and resin acid dissolved and dried, and a layer of sensitive emulsion, substantially as described.

3. A photographic stripping-film comprising in its construction, a base of transparent paper, a stripping medium of an aluminium salt of a fatty and resin acid, a strengthening layer of insoluble gelatin, and a coating of sensitive emulsion, substantially as described.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

J. E. THORNTON.  
C. F. S. ROTHWELL.

Witnesses:

J. OWDEN O'BRIEN,  
HARRY BARNFATHER.