

No. 723,054.

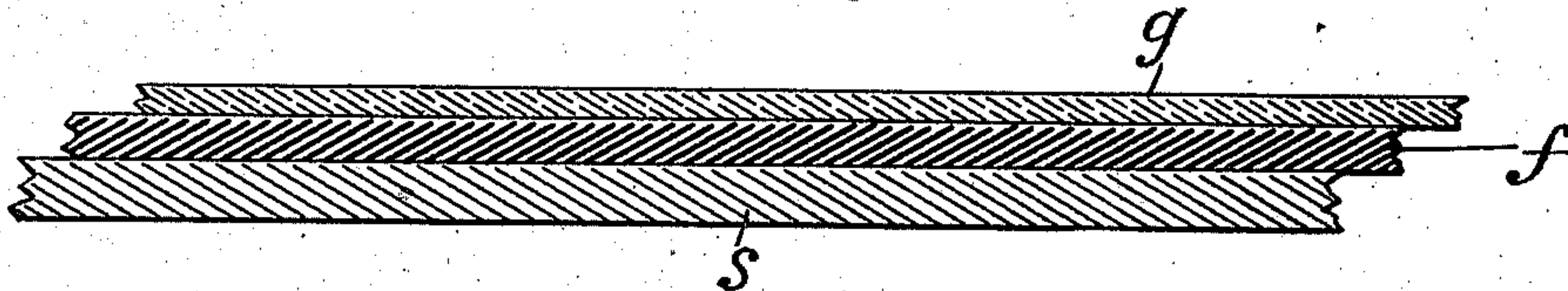
PATENTED MAR. 17, 1903.

W. H. SMALLEY.
PHOTOGRAPHIC FILM.

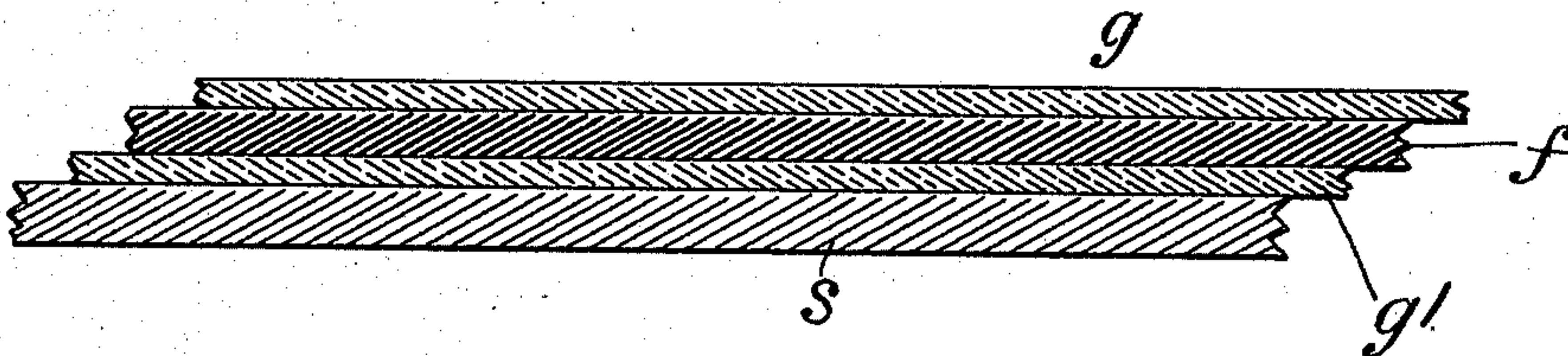
APPLICATION FILED DEC. 1, 1902.

NO MODEL.

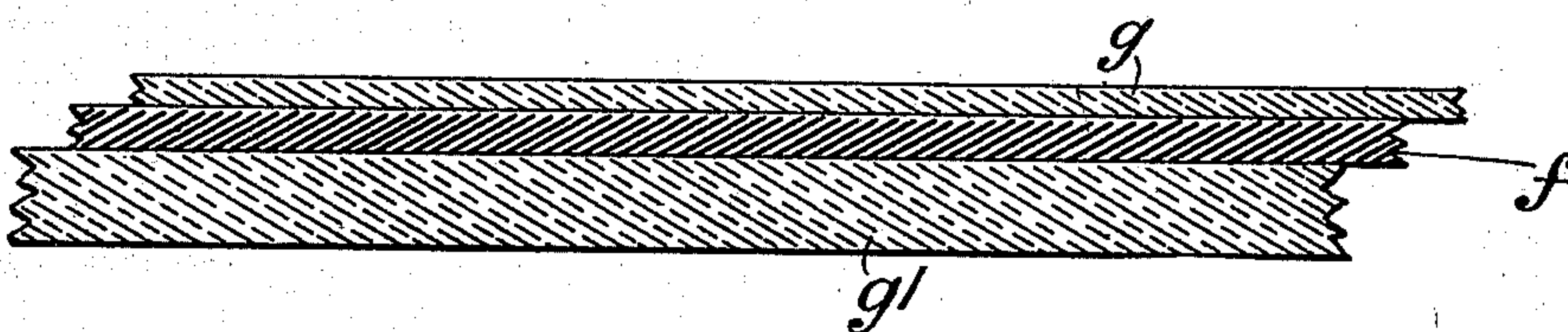
F I G . 1 .



F I G . 2 .



F I G . 3 .



WITNESSES :

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PHOTOGRAPHIC FILM.

SPECIFICATION forming part of Letters Patent No. 723,054, dated March 17, 1903.

Application filed December 1, 1902. Serial No. 133,324. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY SMALLEY, photographic chemist, a subject of the King of Great Britain, residing at 213 and 215 Selhurst road, South Norwood, London, S. E., England, have invented certain new and useful Improvements in Photographic Films, of which the following is a specification.

This invention relates to the manufacture of continuous photographic films, and has for object to avoid the deterioration of the sensitized film by chemical reaction set up between the salts contained in the sensitized film and the supporting and protective materials with which the film may be in contact, the invention being particularly designed to prevent such chemical action occurring between the film and the protective strip of opaque paper or similar light-arresting substance with which the sensitized film usually remains in prolonged contact when stored upon the roll-holder.

The invention is also designed to prevent such chemical action occurring between the sensitized film and its support when that support is made of celluloid.

To this end the invention consists in covering the sensitized film with a thin protective coating of non-sensitized transparent hardened gelatin, such coating being integral with the sensitized film.

The invention further consists in the interposition of a similar protective layer between the film and the celluloid support, the sensitized film being in that case sandwiched between two similar integral protective layers of hardened gelatin, so as to be completely isolated both from the paper or other protective substance and also from the celluloid support, if any; but the under or rear layer of gelatin might alone serve as the support, the use of celluloid being in that case entirely dispensed with. For the purpose of hardening the non-sensitized gelatin about one and one-half per cent., by weight, of chrome-alum relatively to the weight of dry gelatin or an equivalent quantity of another suitable hardening agent, such as formic aldehyde, is incorporated with the gelatin before being used. If a protective layer is to be used intermediate of the sensitized film and a celluloid support, the celluloid support is first

coated with a thin layer of a solution of transparent non-sensitized gelatin with which a hardening agent has been incorporated, upon which layer when dry a coating of sensitized emulsion or two or more successively-superposed coatings of emulsion of progressively-increasing degrees of sensitiveness is or are applied, and finally the sensitive surface is coated with a thin layer of the same solution of transparent non-sensitized gelatin, or the layer of gelatin intermediate of the film and its support might be omitted, the sensitized film being applied directly to its support in the usual way and finally covered with the protective layer of gelatin, as above stated. If no support other than the under layer of non-sensitized gelatin is used, the latter is formed by being applied upon a highly-polished surface as a coating or succession of superposed coatings until sufficient thickness is attained to enable the layer of gelatin when ultimately stripped from the said surface to act as the permanent support for the film. Before, however, the gelatin layer is stripped the sensitized emulsion is applied to it in the usual way to form the sensitized film, to which the final coating of transparent non-sensitized gelatin is then applied, after which the entire film formed of sensitized emulsion inclosed over its whole area between layers of hardened transparent gelatin integral with the sensitized film is stripped from the polished surface upon which it was thus produced.

In the accompanying drawings I have represented on a highly-magnified scale cross-sections of films made according to my invention, wherein—

Figure 1 shows a film provided with a protective coating of gelatin on its face only. Fig. 2 shows a film with a protective coating of gelatin and a layer of gelatin intermediate of the sensitized film and its support. Fig. 3 shows a similar film in which the celluloid support is dispensed with, the under layer of gelatin alone forming the support.

In Fig. 1, *s* is the ordinary celluloid support. *f* is the sensitized film applied in a single coating or in a succession of coatings of progressively-increasing degrees of sensitiveness. *g* is the covering layer of transparent non-sensitized hardened gelatin.

In Fig. 2, *g'* is the layer of non-sensitized

hardened gelatin interposed between film *f* and support *s*.

In Fig. 3 the celluloid support is omitted and the rear layer of non-sensitized gelatin *g'* is made thick enough to serve as a support for the sensitized film *f*, which is coated with a thin protective layer of non-sensitized gelatin *g*, as before.

I claim—

10 1. In a photographic film, the combination with a support, and a layer of sensitized gelatin carried by said support, of a thin protective covering layer of transparent non-sen-

sitized hardened gelatin integral with the sensitized layer, as described. 15

2. In a photographic film, the combination with the layer of sensitized gelatin, of a thin covering layer of transparent non-sensitized hardened gelatin and of a similar under layer of the same material, the sensitized film being inclosed between and integral with both layers as specified. 20

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Witnesses:

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