A. F. SULZER.

ANTISTATIC PHOTOGRAPHIC FILM.

APPLICATION FILED FEB. 21, 1921.

1,432,367. Patented Oct. 17, 1922.

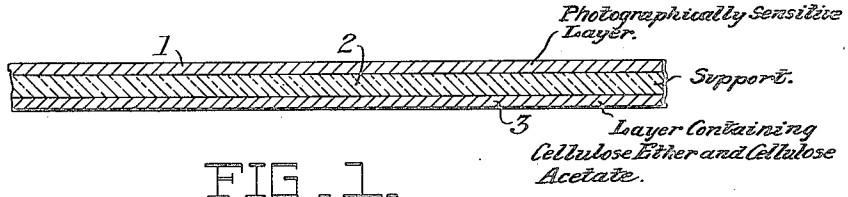


FIG. 1.

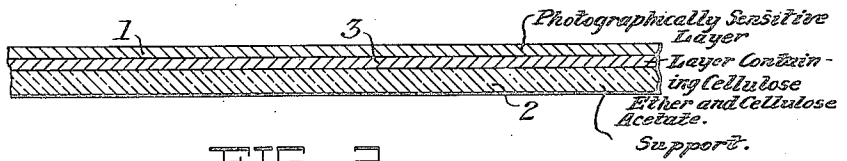


FIG. 2.

WITNESS

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UNITED STATES PATENT OFFICE.

ALBERT F. SULZER, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

ANTISTATIC PHOTOGRAPHIC FILM.

Application filed February 21, 1921. Serial No. 446,783.

To all whom it may concern:

Be it known that I, ALBERT F. SULZER, a citizen of the United States of America, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Antistatic Photographic Films, of which the following is a full, clear, and exact specification.

This invention relates to photographic film. The principal object of this invention is to provide a film having the usual qualities essential in commercial practice, which will also be so constituted that markings, due to electrical discharges, are prevented or minimized to a harmless amount. Other objects will hereinafter appear.

Due to the manipulation of sensitive photographic film, some times in manufacture, but more frequently in use, characteristic lines or patches may appear on development, because of electrical discharges which are created during the handling. The fog or fog lines which are thus formed on the film are particularly noticeable in the case of the standard species of motion picture film, which includes a nitrocellulose support or base. It is very important from the commercial standpoint to prevent this defect in the motion picture art, particularly when making negative film strips. The trouble is commonly referred to as "static" and will be so designated herein.

While certain camera modifications for preventing this electrical trouble have been proposed, it is very desirable to prevent static by a proper constitution of the film, so that the latter may be employed in any commercial camera without any precautions being taken by the user. Of course, the film should likewise be capable of subsequent fluid treatment and drying on the customary racks or apparatus without injury.

I have discovered that film having unexpectedly strong anti-static properties may be prepared by incorporating in its support a layer containing an ether of collulose and cellulose acetate. This invention is a specific application of the broader discovery disclosed in my co-pending application filed of even date herewith, Serial No. 446,782. The composition hereinafter described is claimed in my co-pending divisional application Serial No. 543,531, filed Mar. 13, 1922, for composition for making anti-static photographic film.

In the accompanying drawing,—

Fig. 1 is a sectional view on an exaggerated scale of the preferred embodiment of my invention;

Fig. 2 is a sectional view on an exaggerated scale of a modification of the invention.

In the drawing, 2 represents the support of any customary type, such as a flexible transparent base of nitrocellulose, containing softening substances and modifying agents if desired. Upon the support 2 is a photographically sensitive layer 1 which is preferably of the usual silver-haloid emulsion type. 3 is my anti-static layer or backing, this being located, in the preferred form of my invention, on the base or support 2 which is opposite to the sensitive layer 1.

The ether-containing layer 3 may be located between the support 2 and sensitive layer 1, as shown in Fig. 2, but this is not the preferred form of my invention, although useful photographic film may be made in that way.

In preparing a composition for forming the coating 3, I find it best to dissolve the cellulose ether and the cellulose acetate separately, the two solutions being then mixed and finally diluted if desired. The following proportions and solvents are useful, but, of course, may be widely varied. The proportions are by weight. I may dissolve 45 parts of ethyl cellulose, of the kind which is insoluble in water and not injuriously softened by the latter, in 50 parts of ethyl alcohol and 900 parts of chloroform. I separately dissolve 45 parts of acetone-soluble cellulose acetate in sufficient acetone to make a clear solution. I then combine the acetate and ether solutions into a homogeneous composition. The latter may then be diluted with a mixture of acetone and ethyl alcohol until the acetone content becomes say 4000 parts, and the alcohol may amount to 550 parts. By using this method of mixing, a properly diluted flowable composition is provided which sets quickly when coated upon the film support, the volatile ingredients passing away and leaving a transparent, hard anti-static backing resistant to photographic solutions, said coating or backing comprising essentially cellulose ether and cellulose acetate.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A photographic film comprising a film support, a photographically sensitive layer carried thereby, and a layer comprising an ether of cellulose and cellulose acetate.

2. A photographic film comprising a film support, which tends to produce static, a photographically sensitive layer carried thereby and an anti-static backing comprising ethyl cellulose and acetone-soluble cellulose acetate.

3. A photographic film comprising a support containing cellulose nitrate, a photographically sensitive layer carried thereby and a backing comprising an ether of cellulose and cellulose acetate.

4. A photographic film comprising a support of cellulose nitrate, a photographically sensitive layer carried thereby, and a backing comprising water-insoluble ethyl cellulose and acetone-soluble cellulose acetate.

Signed at Rochester, New York, this 14th day of February, 1921.

ALBERT F. SULZER.