

UNITED STATES PATENT OFFICE.

EDWIN BRANDENBERGER, OF THAON-LES-VOSGES, FRANCE.

MANUFACTURE OF PHOTOGRAPHIC FILMS.

984,886.

Specification of Letters Patent.

Patented Feb. 21, 1911.

No Drawing.

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To all whom it may concern:

Be it known that I, EDWIN BRANDENBERGER, a chemist, of Thaon-Les-Vosges, Vosges, France, have invented a new and useful Improved Manufacture of Photographic Films, which is fully set forth in the following specification.

This invention relates to a process by means of which it is possible to make sensitive to the light, cellulosic films obtained from water solution, more particularly cellulosic films obtained by regenerating the cellulose of a water solution of cellulosic xanthate of sodium (viscose). The films thus obtained can be used in photography, for kinematographic stereoscopic purposes, etc., either as positive or as negative films.

The process of manufacture is as follows: The cellulose films just mentioned are first of all dipped into a bath of water, so as to obtain a swelling of the said films. In that state they are at once dipped into a bath of a chlorid, bromid or iodid, as is generally done in photography, preferably using either chlorid of sodium or iodid of potassium. Owing to the particular state of the film at the moment of its immersion into the bath, on account of the swelling produced by the water, the salt penetrates into the film instead of merely forming a superficial layer. It is properly impregnated when removed from the chlorid, bromid or iodid bath.

It will be understood that the swelling required for the impregnating just mentioned, could be obtained without using the water bath, but using a water solution of the chlorid, bromid or iodid. In that single bath the film would become swollen and impregnated with chlorid, bromid or iodid.

After removing it from the chlorid, bromid or iodid bath, the film can be dried or immediately dipped into a bath of silver salt such as nitrate of silver, similar to that used in photography. After being removed from that bath, the film could be subjected to the action of any suitable bath used in photography, either in order to increase its sensitiveness, or for giving it special properties.

It goes without saying that the order in which the film passes into the successive baths is not absolutely essential, this order could be modified according to the process employed. In the same way, it is obvious that, instead of immersing the films in the

bath, they could be exposed to suitable gases or vapors after having impregnated the film in one of the baths.

After that treatment, the dry films are utilized for photography either as a positive or a negative.

The process described for the preparation of sensitive films with chlorid, bromid or iodid of silver, is given merely by way of example. It is obvious that it is possible to replace silver salts by any other salt or substance capable of rendering the film sensitive to light, for instance, salts of gold, salts of iron (ferro-cyanids) etc., and, generally, any salts used in photography. The impregnation would take place in the same conditions, and the result desired, namely the production of a sensitive film without gelatin or any other method of fixing, would be obtained. Heat no longer has any effect on the photographic impressions obtained, and no separation can take place such as often happens with all sensitive papers or plates in which the sensitive portion is merely a superficial one and is not impregnated in the mass of the support.

It will be understood that it is possible to fix cellulose films thus obtained, to a suitable support, for instance glass or paper. The fixing would be effected by glue, either soluble or insoluble in water, according to the purposes desired, and the said fixing could be done either before the sensitizing of the film or after.

Cellulose sheets could be treated either by treating a continuous band, or by treating sheets cut to the desired size.

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

1. The herein described process of sensitizing films, which consists in placing a film in a liquid bath, allowing the film to remain in said bath until the film has swelled, and then impregnating the film with sensitizing substances.

2. The herein described process of sensitizing films, which consists in placing a cellulosic film in a liquid bath, allowing the film to remain in said bath until the film has swelled, and then impregnating the film with sensitizing substances.

3. The herein described process of sensitizing films, which consists in placing a cel-

lulosic film in a bath of a haloid salt, allowing the film to remain in said bath until the film has swelled, and then impregnating the film with sensitizing substances.

- 5 4. The herein described process of sensitizing films, which consists in placing a cel-
lulosic film in a bath of a haloid salt, allow-
ing the film to remain in said bath until the
film is swelled, placing the film in a bath of

a silver salt, and further treating the film 10
for photographic purposes.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

EDWIN BRANDENBERGER.

Witnesses:

EMILE LUBRET,
H. C. COXE.