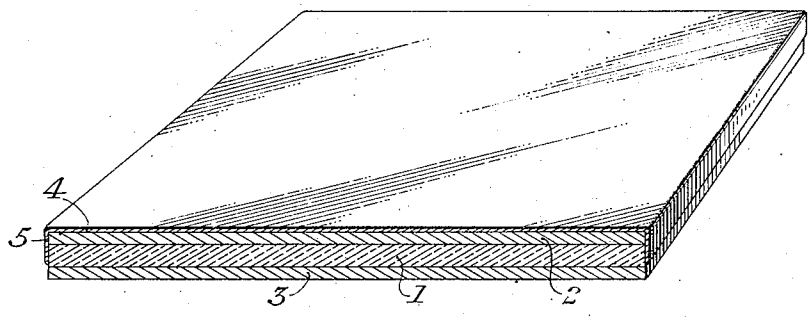
F. W. LOVEJOY.

PHOTOGRAPHIC FILM.

APPLICATION FILED SEPT. 6, 1919.

1,342,590. **Patented June 8, 1920.**



WITNESSES:

Grace L. Stewart.

Helen M. Fraser.

INVENTOR

Frank W. Lovejoy,

By R. L. Stinchfield

M. M. Perrins

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANK W. LOVEJOY, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

PHOTOGRAPHIC FILM.

1,342,590. Specification of Letters Patent. Patented June 8, 1920.

Application filed September 6, 1919. Serial No. 322,125.

To all whom it may concern:

Be it known that I, FRANK W. LOVEJOY, 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 Photographic Films, of which the following is a full, clear, and exact specification.

This invention relates to a sensitized photographic product provided with a coating that protects it from dampness and the deterioration caused thereby.

It is well known that the sensitiveness of many photographic colloids diminishes with comparative rapidity when exposed to dampness, and that the latent image is even more susceptible to the effects of moisture. While it is possible by means of sealed packages to keep sensitized products for long periods prior to their exposure, there has not been attained any practicable way of preserving them when exposed but undeveloped immune from the action of dampness, where the exposure was necessarily made in a humid atmosphere. The resealing of the products in a container is of little avail inasmuch as the air in the container is now damp and the products in being used have been open to the air. This fact has added greatly to the cost and inconvenience of making photographic records in moist climates, particularly in tropical countries, where the immediate development of exposed films or plates is often very troublesome.

The object of my invention is the production of a sensitized photographic colloid that will be protected from the effects of moisture even after exposure, and which will not require any manipulation or attention in addition to that given to other films or plates in the ordinary photographic processes. More particularly it is my object to provide a photographic film of the usual form that may be exposed under adverse atmospheric conditions and be kept after such exposure for a considerable period before development, and then developed in the usual way.

This object I attain by coating the ordinary photographic film or plate with a material which is impervious to moisture but is transparent, and which is solid at any temperature liable to be encountered and which will be so affected chemically by the ordinary developing bath that it will be removed in that bath and permit the developer to affect the exposed, sensitized emulsion. I have found that a thin layer of fatty acid meets the requirements outlined above. This will be removed during development by the saponification of the acid by the carbonate in the developing fluid. Sodium carbonate or an equivalent alkali is present in considerable quantities in all developing fluids used for emulsions containing light sensitive silver salts, and as the layer of acid used is extremely thin, it will not materially affect the action of the developer, except to retard it slightly. It is therefore possible to carry out all the ordinary photographic processes with usual materials and in the customary way.

In the accompanying drawing, 1 indicates a support of water-impervious material, such as celluloid; 2 is a sensitive photographic emulson, usually gelatin containing a sensitive salt of silver in a colloidal condition; 4 is the layer or protective material; and 3 is the usual coating of gelatin on the back of the celluloid support to prevent curling. The layer of protective material may be carried around the edges of the sensitive emulsion to the support, as shown at 5, to prevent moisture permeating from the edges.

The film or other sensitized product may be supplied in any of the well known forms. The thickness of the layers is shown on a much exaggerated scale. It is to be understood that the suport may be of any water impervious material and that the sensitive layer may be of any type, as, for instance, bichromated gelatin.

As a specific example of such a coating, two grams of either palmitic or stearic acid is dissolved in 100 c. c. of absolute alcohol. The resultant solution is applied to the emulsion side of a photographic film or plate by one of the usual processes of coating. Both of the above acids are insoluble in water and are solid at all temperatures below 50 degrees C. and are saponified by alkalis.

I contemplate the use of other materials, particularly the other acids of this series, having the necessary properties. They should be so transparent as not to retard injuriously the actinic rays. They should be solid at all temperatures liable to be encountered, and by this is meant that, even though

soft, they will sufficiently retain shape and position as to continue to protect the colloid.

If the sensitive layer is a bichromated colloid which is differentially tanned by light, and which is developed by the action of warm water washing away the untanned portion, the water should be made slightly alkaline to saponify the acid.

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

1. An article of manufacture comprising a water impervious support, a layer of sensitized photographic material and a layer of protective material, said last named material being transparent and impervious to moisture, but capable of being so affected by the developing bath as to be readily removed thereby from the sensitized emulsion.

2. An article of manufacture comprising a water impervious support, a photographically sensitive layer thereon, and an outer coating of protective material which is transparent, impervious to water, solid at a temperature of 50 degrees C., and capable of being saponified in an alkali bath.

3. An article of manufacture comprising a water impervious support, a layer of gelatin containing a colloidal sensitive silver salt, and a layer of fatty acid.

Signed at Rochester, New York, this 2nd day of Sept., 1919.

FRANK W. LOVEJOY.