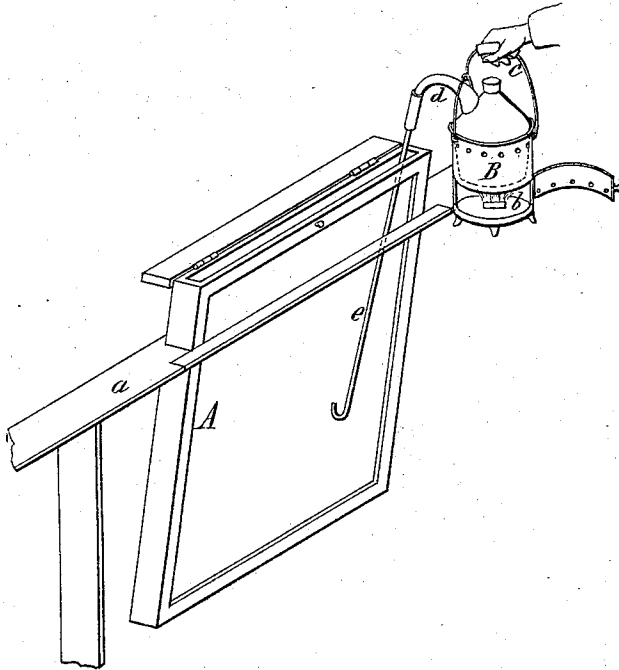


H. J. SUNTER.

Method of Heating Photographic Negative Baths.

No. 137,110.

Patented March 25, 1873.



Edward Wilhelm
John J. Bonner } Witnesses

Harry J. Sunter Inventor
by Jay Hyatt Atty.

UNITED STATES PATENT OFFICE.

HARRY J. SUNTER, OF BUFFALO, NEW YORK.

IMPROVEMENT IN METHODS OF HEATING PHOTOGRAPHIC-NEGATIVE BATHS.

Specification forming part of Letters Patent No. 137,110, dated March 25, 1873.

To all whom it may concern:

Be it known that I, HARRY J. SUNTER, of the city of Buffalo, in the county of Erie and State of New York, have invented certain Improvements in Photography, of which the following is a specification:

My improvement relates more especially to a method of treating the negative bath, as it is termed, or that in which the negative plate is excited or sensitized, preparatory to receiving the impression. It is desirable that this bath, when used, should be at or above a temperature of about 60° Fahrenheit in order to obtain the best effects and impart to the plate its maximum of sensibility in the shortest period of time. In cold weather the bath has usually been heated by radiation from a stove, which means is attended with considerable inconvenience, besides heating the laboratory to an uncomfortable and undesirable temperature. This difficulty and inconvenience of maintaining the proper temperature of the bath in taking out-door photographic pictures is greatly increased. In sensitizing negative plates coated with collodion or iodized collodion in this bath ether and alcohol from the collodion are gradually absorbed by the bath to a greater or less extent, which renders the frequent renovation of the bath necessary. The removal of the alcohol and ether from time to time has heretofore been accomplished by heating the contents of the bath in an evaporating-dish, which involves considerable time, labor, and waste of material. In using albumenized plates or paper the bath absorbs, to a slight degree, albumen therefrom, which is removed by heating the contents of the bath in any suitable vessel, as above described, whereby the albumen is coagulated and removed by filtration. The most successful photographers use a limited quantity of acid in the negative bath. When the acidity exceeds this limited quantity either by generation from the collodion or by accident this excess has heretofore been removed by precipitation.

The object of my invention is to avoid the above difficulties of heating and maintaining the proper temperature and condition of such negative baths and to obviate the necessity of so frequent a removal and renovation or purification thereof.

My invention, as improvements in the art of

photography, consists, first, in the injection of naked steam in negative or other equivalent photographic baths by which the contents are readily heated and maintained at the proper temperature, while the steam operates to remove or facilitate the escape of the alcohol and ether as it is abstracted from the plates, and also to coagulate any particles of albumen with which the steam may come in contact; second, in the injection into the negative bath, when containing an excess of acid, of naked steam combined with the vapors or fumes of aqua-ammonia for neutralizing such excess of acid.

The accompanying drawing represents an ordinary glass bath-holder and an apparatus which may be used for generating and supplying steam thereto.

A is an ordinary glass bath-holder supported in a frame or table, *a*, and B a small boiler, preferably of copper and tin-lined. It is provided at its base with a lamp attachment, *b*, for heating the same, and a suitable handle, *c*. Near the top of the boiler is arranged a steam pipe or spout, *d*, to which is coupled, in any ordinary and convenient manner, a glass tube, *e*, curved upward at its lower end, as shown in the drawing, so as to prevent the action of the steam, as it escapes, from disturbing the sediment on the bottom of the bath-holder A. The boiler should be supplied with pure rain or distilled water.

In applying steam to the bath submerge the tube *e* in the bath and move it slowly, by means of the handle attached to the boiler, in such manner as to prevent undue heating of the glass. A bath of ordinary size can thus be sufficiently heated in a few minutes. Two applications of steam per day will keep the bath almost free from alcohol. Any albumen which the bath may contain after treating therein albumenized plates or paper is readily coagulated by the steam coming in contact with the particles thereof, without requiring the bath-holder to be emptied of its contents, as heretofore required for the purpose.

For neutralizing any excess of acid which the bath may contain at any time put in the boiler about one dram of aqua-ammonia to every twelve ounces of rain water and inject steam, as before. The vapor of ammonia is discharged with the steam into the bath, where it combines with or neutralizes the excess of

acid contained therein. I have found from experience that the water resulting from the condensation of steam during the process is not sufficient to materially reduce the strength of the bath.

It is obvious that by the use of my improved method a great saving of time and material results, and much inconvenience is avoided, while its effect on the negative bath in preventing a deterioration thereof insures clear and brilliant negatives.

My improved method is properly applicable to such photographic baths or solutions as are used in the preparation of sensitized plates or paper that have been coated with a preparation of collodion or albumen, and which absorb or abstract from the photographic plates or paper alcohol or albumen, or baths such as contain an acid, such as nitric or glacial acetic acid, which the vapor of ammonia will neutral-

ize; and to such use and application my invention is restricted.

What I claim as my invention is—

1. The method of heating negative or other photographic baths or solutions for sensitized plates or paper coated with a preparation of collodion or albumen, by means of steam generated in a suitable apparatus and injected into said bath, &c., substantially as and for the purpose set forth.

2. The method of heating negative or other photographic baths or solutions used for sensitized plates or paper coated with a preparation of collodion or albumen by means of steam and the vapor of aqua-ammonia injected into said baths, &c., substantially as and for the purpose set forth.

Witnesses:

HARRY J. SUNTER.

HENRY BROWN,

JNO. J. BONNER.