M. ULLMANN.
PRODUCTION OF NEGATIVES.
APPLICATION FILED JAN. 2, 1914.

1,436,125. Patented Nov. 21, 1922.

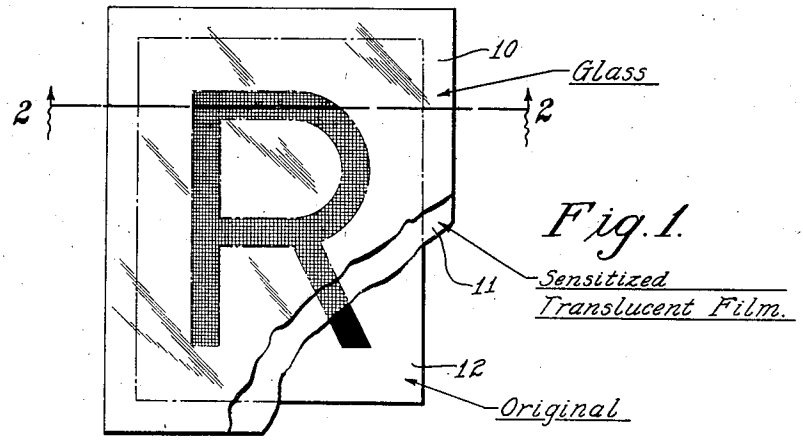


Fig. 1.

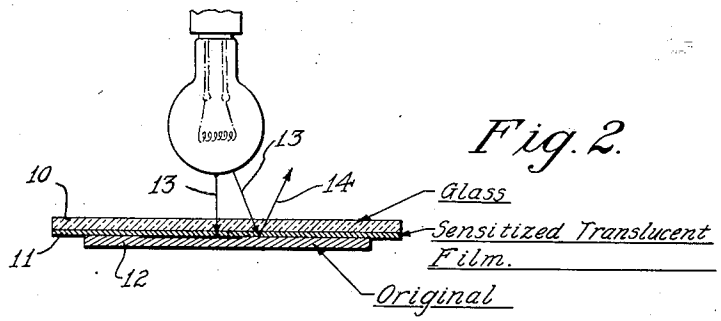


Fig. 2.

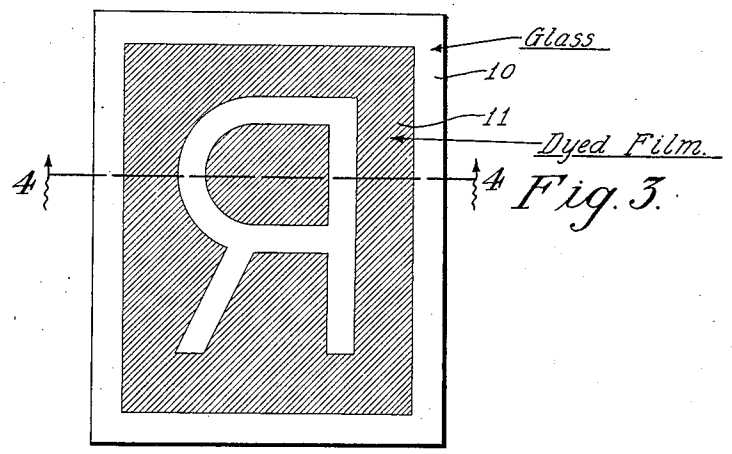


Fig. 3.

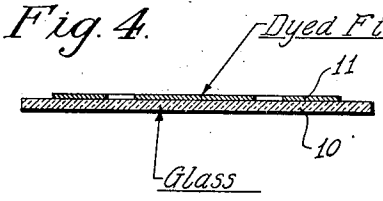


Fig. 4.

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his Attorneys

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UNITED STATES PATENT OFFICE.

MAX ULLMANN, OF ZWICKAU, GERMANY, ASSIGNOR TO KARL WERTH, OF THE HAGUE, HOLLAND.

PRODUCTION OF NEGATIVES.

Application filed January 2, 1914. Serial No. 810,092.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, MAX ULLMANN, a citizen of Germany, and a resident of Zwickau, Saxony, Germany, have invented certain new and useful Improvements in the Production of Negatives, of which the following is a specification.

The invention relates to a process for the production of negatives from originals which are adapted to reflect light from at least a portion of their surfaces and the object is to provide quickly and cheaply a well-defined, direct copy of the original, more particularly with a view for further use in the production of plates for printing.

My invention will best be understood by reference to the following description of an illustrative embodiment thereof taken in connection with the accompanying diagrammatic drawings, wherein

Fig. 1 is a plan view with parts successively broken away illustrating the process of copying,

Fig. 2 is a section on the line 2—2 of Fig. 1,

Fig. 3 is a plan of the negative, and

Fig. 4 is a section on the line 4—4 of Fig. 3.

It will be understood that in the drawings the thickness of the various layers is enormously exaggerated.

In practicing my invention, I may provide a translucent carrier 10, such as a glass plate, which carries a translucent film 11 of chromated colloid, such as bi-chromated gelatine. This is laid on the original 12 which is to be copied with the film 11 in face to face contact therewith, as illustrated in Fig. 2, and light rays 13 from a suitable source are passed through the layers 10 and 11 and are reflected at 14 from the white portions of the original but are absorbed by the black portions such as ordinary print. The portions of the sensitive film 11 opposite the white portions of the original are thus rendered insoluble by the reflected light. The negative is then washed in water or dilute acid to remove the portions which have not been so rendered insoluble. There is thus produced on the plate 10 a negative defined by the insoluble portions of the chromate colloid layer and exhibiting the design corresponding to the black or colored design of the original in intaglio where the soluble colloid has been washed away. After the washing, the plate is dipped in one or more suitable coloring or dyeing baths, for example, a bath of soluble aniline dye such as methyl violet, and the parts of the colloid layer remaining on the plate are thus colored and made relatively opaque, the plate 10 being resistant to the dye. The resulting negative may be further used in the production of printing plates and forms, for example, it may be copied upon a sensitized printing plate and printing carried on by the offset process in the usual way.

In Fig. 1 portions of the capital R representing the original on the image are section lined for black merely to indicate that they are beneath the plate 10 and film 11. As the latter are transparent obviously the image would show with practically complete intensity. In Fig. 3 representing the negative the dyed colloid film is lined to represent purple, this being merely for purposes of illustration and not by way of limitation to a particular color.

The film 11 of bi-chromated colloid is an example of a translucent material adapted without substantial change in its light transmitting properties to be rendered differentially soluble by the action of light so that a portion thereof may thereafter be selectively dissolved by a suitable reagent and washed away. Because it does not print out it may be subjected to the actinic action of light for an adequate time. This is of a particular advantage when the original to be copied is printed on both sides, as, for example, in reproducing a book. It has been found that no difficulty is encountered with shadows from the printed matter on the reverse side of the original not in contact with the colloid film and I believe this to be the case because the passage of the light is not immediately obstructed as soon as the material is exposed to light, but a continued action of the reflected light is permitted which, metaphorically speaking, burns out any shadows which might be due to a slight absorption of the light by printed matter on the reverse side of the original.

The materials utilized in the process are very cheap and may be handled without the aid of a camera and with ordinary care may be manipulated in daylight.

Having thus described one embodiment

of my invention, and without limiting myself thereto, what I claim as new and desire to secure by Letters Patent, is as follows:

1. A process of producing negatives from originals adapted to reflect light from a portion of their surfaces which comprises placing over the original a film of translucent material which becomes differentially soluble under the action of light without substantial change in its light transmitting properties, transmitting light therethrough to be reflected in part from the original, washing out the soluble portions of the film and dyeing the remaining portions to produce an image.

2. A process for the production of negatives from originals adapted to reflect light from a portion of their surfaces which comprises placing a bi-chromated colloid film mounted on a translucent carrier face to face with the original, transmitting light therethrough to be reflected in part from the original, washing the carrier and film to remove unaffected portions of the film and dyeing the remaining portions to produce an image.

3. A process for the production of negatives from originals adapted to reflect light from a portion of their surfaces which comprises placing a bi-chromated colloid film mounted on a translucent carrier face to face with the original, transmitting light therethrough to be reflected in part from the original, washing the carrier and film to remove unaffected portions of the film and dyeing the remaining portions to produce an image, said carrier being resistant to the dye.

4. A process of producing negatives from originals which are adapted to reflect light from a portion of their surfaces which includes the step of placing over the original a translucent sheet comprising a film of bi-chromated colloid and transmitting light therethrough to be reflected in part from the original thereby to form a negative image in the bi-chromated colloid.

In testimony whereof I affix my signature in presence of two witnesses.

MAX ULLMANN.

Witnesses:
WALDEMAR HAUPT,
HENRY HASPER.