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M. ULLMANN

PROCESS FOR PRODUCING NEGATIVES FROM NONTRANSPARENT ORIGINALS FOR USE IN PREPARING PRINTING PLATES

Filed April 14, 1921

Fig. 1.

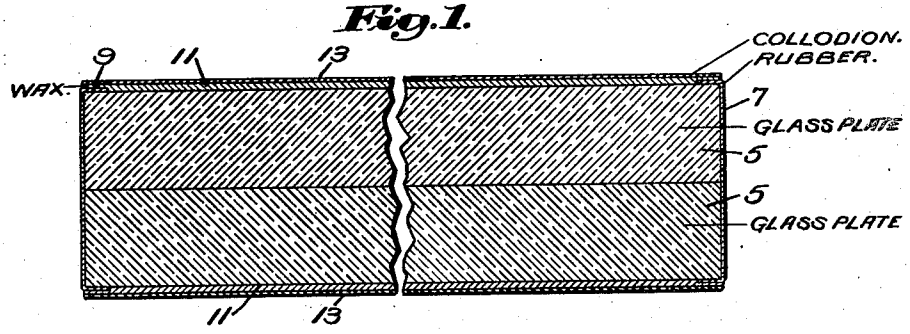


Fig. 2.

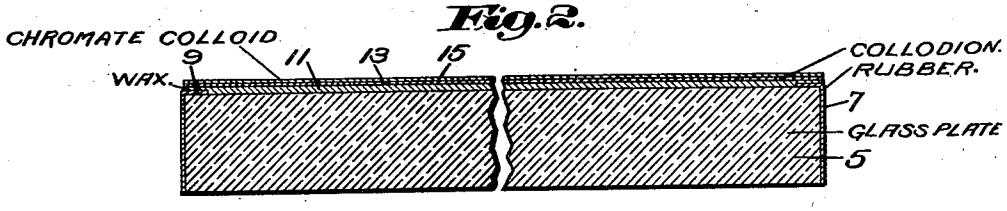
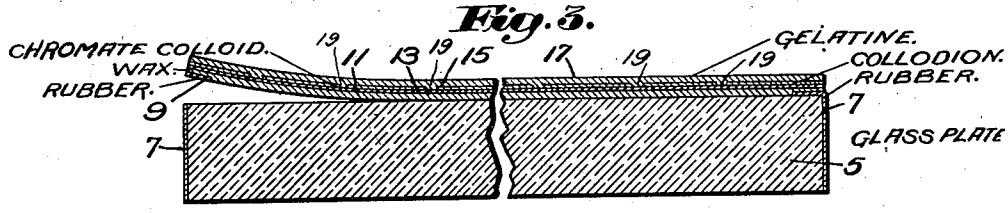


Fig. 3.



Inventor:
Max Ullmann,
by Emery, Booth, Janney & Varney
Attys.

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UNITED STATES PATENT OFFICE.

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

PROCESS FOR PRODUCING NEGATIVES FROM NONTRANSPARENT ORIGINALS FOR USE IN PREPARING PRINTING PLATES.

Application filed April 14, 1921. Serial No. 461,455.

(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, residing at Zwickau, Saxony, Germany, have invented certain new and useful Improvements in Processes for Producing Negatives from Nontransparent Originals for Use in Preparing Printing Plates (for which I have filed applications in various countries foreign to the United States, as follows: Germany, filed Jan. 7, 1920, patented Dec. 21, 1921, No. 349,231; Belgium, filed Dec. 2, 1920, application No. 253,983; Bohemia, filed Nov. 20, 1920; Denmark, filed Oct. 27, 1920, application No. 3,383; Finland, filed Nov. 2, 1920, patented Sept. 2, 1921, No. 8,694; France, filed Nov. 3, 1920, patented July 8, 1921, No. 626,836; Italy, filed Oct. 20, 1920, patented Jan. 31, 1922, No. 542/186; Holland, filed Nov. 29, 1920; Luxemburg, filed Oct. 23, 1920, patented Oct. 23, 1920, No. 11,986; Norway, filed Nov. 6, 1920, patented Aug. 22, 1921, No. 33,302; Austria, filed Oct. 21, 1920, application No. 5784/20; Poland, filed Oct. 30, 1920, application No. 15,090; Sweden, filed Nov. 16, 1920, application No. 5433/20; Switzerland, filed Oct. 22, 1920, patented Sept. 30, 1921, No. 92,159; Hungary, filed Oct. 20, 1920, patented Feb. 14, 1921, No. 14,668; Portugal, filed Dec. 15, 1920, patented March 11, 1921, No. 11,994; Spain, filed Nov. 23, 1920, patented Nov. 24, 1920, No. 76,338; Turkey, filed Dec. 12, 1920, patented Dec. 15, 1920, No. 3,152; England, filed Jan. 7, 1921, application No. 726/21; Rumania, filed Jan. 25, 1921, application No. 6,649; Mexico, filed May 9, 1921, patented May 18, 1922, No. 20,289; Japan, filed March 5, 1921, application No. 66,112; Brazil, filed March 26, 1921, patented Dec. 17, 1921, No. 12,446; Australia, filed Jan. 8, 1921, application No. 69/21; Argentina, filed Jan. 14, 1921, patented Jan. 14, 1921, No. 22,394), of which the following description, taken in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

In my German Patent 287,214 of August 18, 1913, and in my corresponding Letters Patent of the United States, 1,436,125, dated Nov. 21, 1922, there is described a process for producing from originals which are adapted to reflect light from a portion of their surfaces transfer negatives for use in preparing printing plates. The preferred process there described may be briefly recapitulated as follows: A thin sensitized layer of bichromated colloid mounted on a suitable carrier, such as a glass plate, is placed over the original which is to be copied with the sensitized layer in contact therewith. Light rays from a suitable source are passed from the rear of the plate through the sensitized film and are reflected from the white portions of the original but are absorbed by the black portions such as ordinary print. The portions of the sensitized film 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 been rendered insoluble. There is thus produced on the plate a negative image defined by the insoluble portions of the chromated colloid layer. After washing the plate is dipped in one or more suitable coloring or dyeing baths, such as a bath of methyl violet, and the parts of the colloid layer remaining on the plate are colored in such manner that they will intercept objectionably actinic light. As described in my patent and application referred to this negative may be used directly for the production of a printing plate, for example, by copying it upon a sensitized printing plate and carrying on the printing by the off-set process in the usual way. Hitherto, however, such negatives, unless a counter-transfer were made, could be used for printing only on off-set machines. The negative was copied on a zinc or aluminum plate in well known manner. The image on the metal plate was thus a positive, the characters appearing right side to and thus they were suitable only for printing on an offset press. If it was desired to print on an ordinary lithographic press or on a zinc rotary machine a counter-transfer had to be made so as to reverse the image. By the

transfer and counter-transfer sharpness and distinctness were lost. In accordance with the present invention means are provided for producing negatives in such manner that they may be used without transfer for producing plates either for a lithographic machine or for an offset press.

My invention will readily be understood by reference to the following description of a particular embodiment thereof diagrammatically illustrated in the accompanying drawings, wherein:

Figs. 1, 2 and 3 are diagrammatic sections illustrating successive stages in the preparation of the negative.

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

I will first describe in detail one particular method of practicing the invention. Thus, referring to Fig. 1, two glass plates 5 may be placed together as shown and held pressed together by clamps or other suitable means. The edges of the plates are then dipped into a solution of rubber so that the side edges of the glass plates are covered as indicated at 7 and also the margins of the faces thereof at 9 to form a rubber coated margin perhaps .25 cm. in width. The double plate thus produced may then be immersed in a solution of beeswax which has been dissolved in carbon tetrachloride, for example. The faces of the plate will each thus receive a smooth, perfectly transparent layer 11 of wax. When this coating is dried the plate is dipped into a vessel containing 3% collodion and a few drops of castor oil to provide the coatings 13. It is then set upright and allowed to dry. When the coating shown in Fig. 1 is dry the two plates are separated and each, as shown in Fig. 2 consisting of a plate coated on one side and uncovered on the other side, is then treated as a unit. The plate shown in Fig. 2 is coated with a solution of chromate colloid to provide the sensitized layer 15 which should be very thin, preferably much less than .01 of a millimeter thick. The completed plate shown in Fig. 2 may then be exposed preferably in the manner referred to above and more fully described in my German patent and United States application therein referred to and there is thus produced a dyed intaglio negative image, portions of the bichromated colloid layer corresponding to the dark portions of the original being washed away as indicated at 19 in Fig. 3.

After the exposed and dyed plate is dry, the negative is completed by applying thereto an aqueous gelatin solution to which a few drops of glycerin have been added, this solution providing the coating 17. The plate is then placed on a cold support and quickly chilled to set the gelatin. The drying is done with warm air. As indicated at the left of Fig. 1, the rubber margins of the compound film comprising the layers 11 to 17, inclusive, are then severed and this compound film stripped off the glass plate 5.

The compound film thus stripped from the plate 5 comprises the layer 15 which contains the dyed image and the transparent layers 11 and 17 on either side thereof, the layer 17 filling the depressions 19 of the intaglio image formed in the layer 15 and providing a smooth surfaced coating overlying the outer face of the image, as shown in Fig. 3. The layer 17 also provides for reinforcing the flexible negative formed by the compound film. From this film a printing plate adapted for use either in an offset or the ordinary flat plate printing machine can be produced. The operation is the customary one in doing transfer work and the proper face of the compound film is opposed to the plate in accordance with the result desired. I deem it unnecessary to describe in detail the method of procedure. Suffice it to say that the negatives consisting of the compound film described are trimmed to the proper sizes and secured in openings in an opaque sheet of black paper or the like properly divided off to provide in the printing plate to be produced for the margins in the work and the edge which engages with the grippers in the press. This sheet is lightly secured to the sensitized machine plate and the copying process completed in the customary manner.

By utilizing a negative prepared in this manner without the usual carrier in the form of a glass plate the negative may be used as a medium for copying the photographic images either right side to or in reverse position for use either with offset printing presses or direct printing presses. In either instance, the process is direct and time saving without the necessity of transfers and the sharpness and definition of images are preserved.

The negative herein described is claimed as an article in my Patent 1,436,629, dated Nov. 21, 1922, and based on my copending application Serial No. 573,660, filed July 8, 1922, as a continuation of this present application.

Having thus described in detail the particular embodiment of my invention, the principles exemplified thereby which I claim as new and desire to secure by Letters Patent I shall express in the following claims.

1. A method of producing negatives adaptable for use in preparing printing plates characterized by supporting a sensitized layer on a plate by means of a supporting transparent film, actinizing the layer to produce an image, photographically developing the image, covering the

layer with a second transparent film and stripping from the plate the layer with the covering films on either side.

2. A method of producing negatives adaptable for use in preparing printing plates characterized by providing a chromated colloid layer on a first transparent film on a carrier, actinizing the chromated colloid to produce an image, washing, dyeing the image to cause it to intercept objectionably actinic light and covering the dyed chromated colloid layer with a second transparent film whereby to imbed the same between such transparent films, the first of which permits the negative to be stripped from the carrier and the second of which provides a smooth surfaced coating overlying the other face of the image.

3. The method of producing negatives adaptable for use in preparing printing plates characterized by providing a chromated colloid layer on a first transparent film, actinizing the chromated colloid to produce an image, washing away the unactinized portions to leave the image in intaglio, dyeing the image to cause it to intercept objectionably actinic light and covering the dyed chromated colloid layer with a second transparent film filling the depressions thereof and providing a smooth surface.

4. A method of producing negatives adaptable for use in preparing printing plates comprising covering a plate with a transparent substance, putting a chromated colloid layer on said substance, actinizing the layer to produce an image, treating the image to cause it to intercept objectionably actinic light, applying a transparent coating thereover and detaching the actinized layer from the plate with the coatings on either side of said layer.

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

MAX ULLMANN.

Witnesses:
ERNST ROEBL,
CARL LORENZ.