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K. C. D. HICKMAN
PHOTOGRAPHIC PRINTING METHOD

1,897,844

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FIG. 1

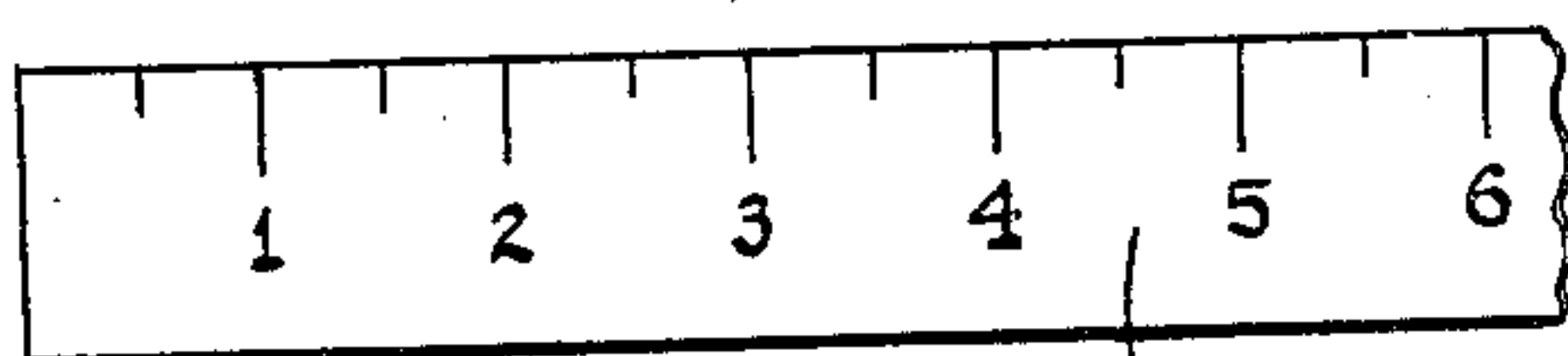
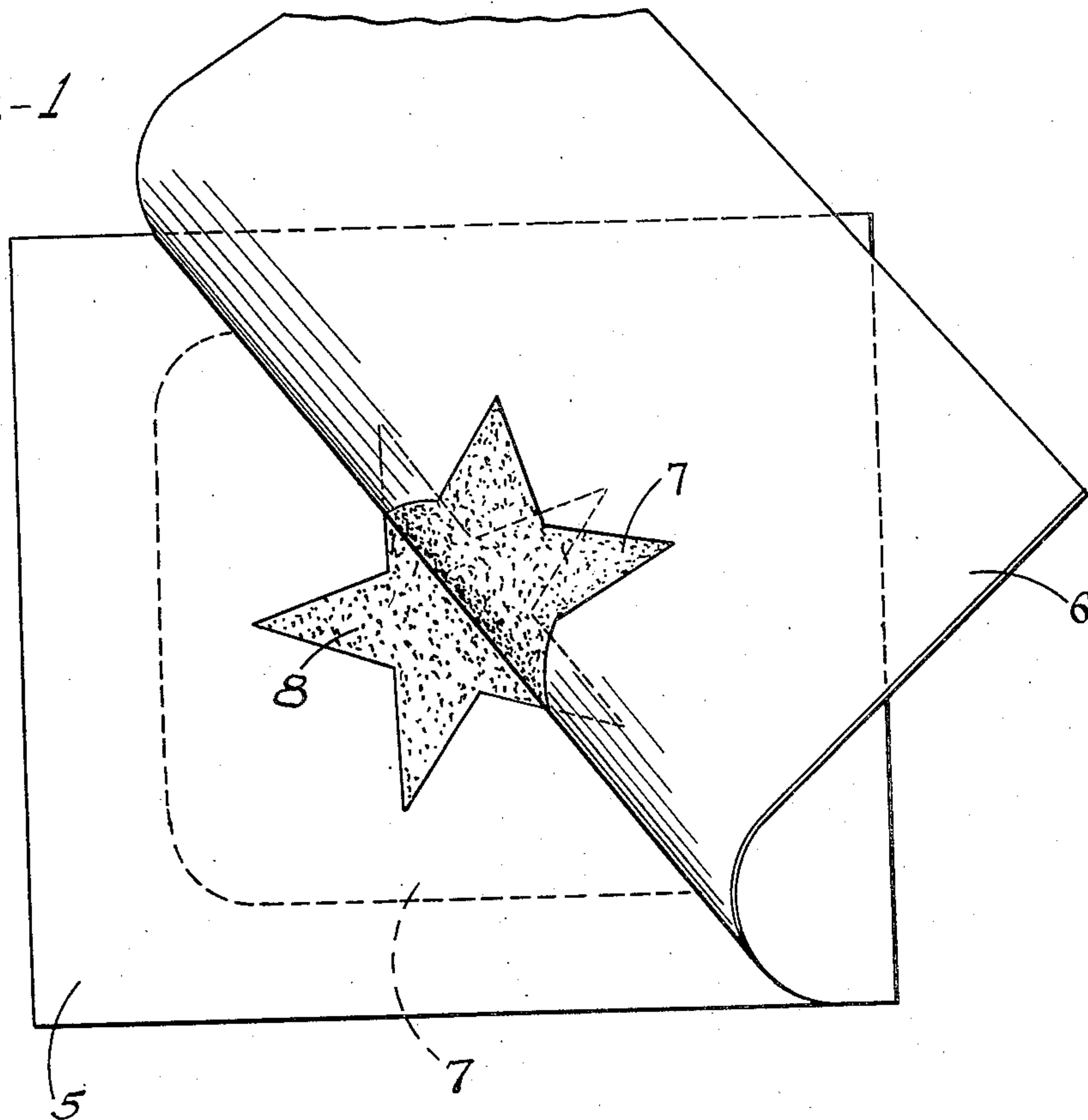
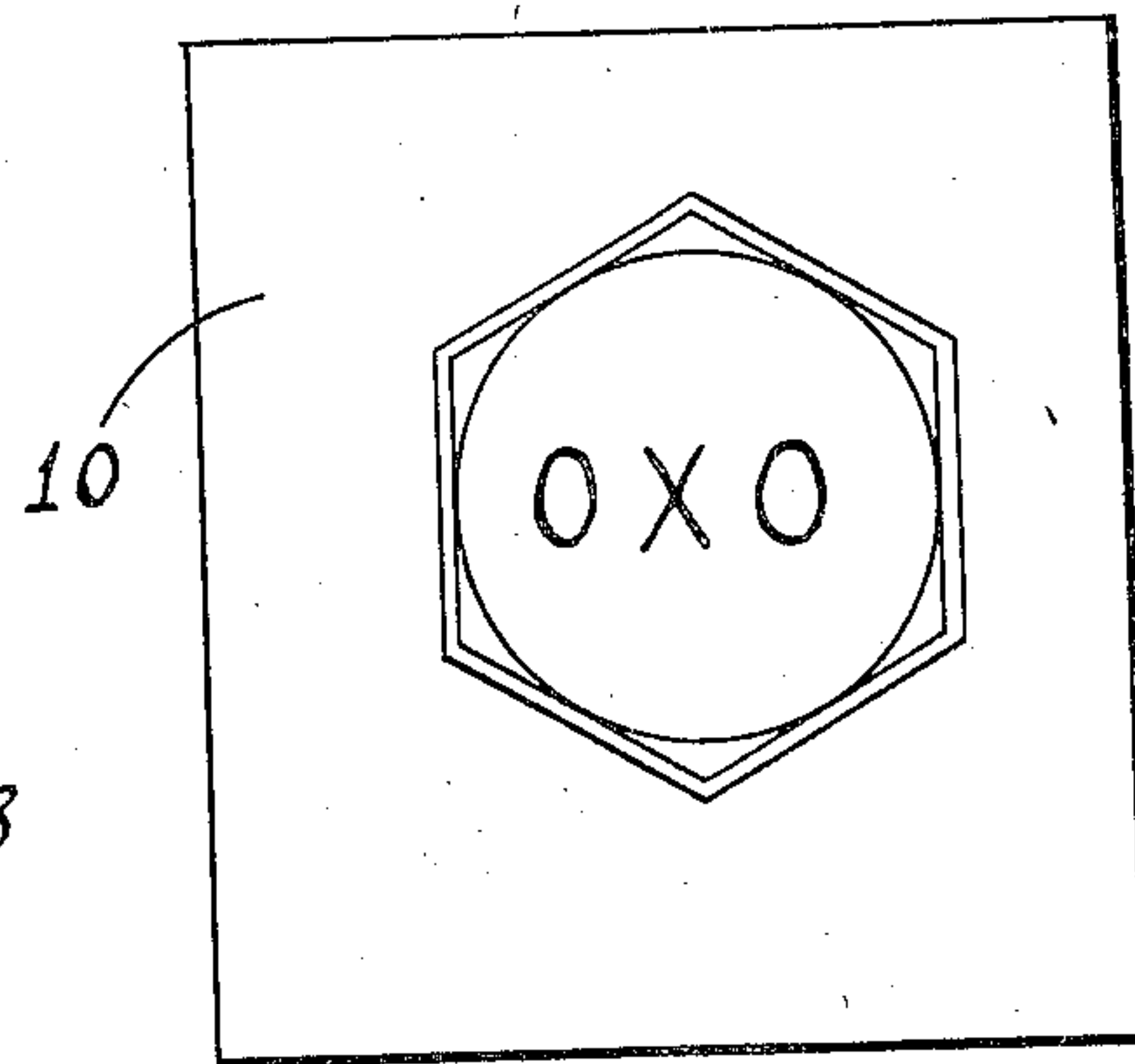


FIG. 2

FIG. 3



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PHOTOGRAPHIC PRINTING METHOD

Application filed February 11, 1931. Serial No. 515,120.

This invention relates to the art of photographically duplicating or transferring an impression from one surface to another.

This application is a continuation in part of my application, Serial No. 356,901, filed April 22, 1929.

In accordance with the present invention a novel method is provided whereby copies of an original impression may be accurately and quickly prepared at small expense. A further feature of the invention includes a method whereby images on a photographic record may be transferred to the surface of a layer of cellulosic material. An additional feature includes a method of obtaining duplicates of a photographic record which comprises pressing the surface of a layer of a cellulose derivative while in a softened condition into firm engagement with the surface of the record.

These and other features of the invention will appear from the detailed description and claims when considered with the drawing in which

Fig. 1 shows the method of preparing a duplicate impression;

Fig. 2 shows one form of transparent instrument scale made by the present invention and

Fig. 3 shows a plate made by the present invention for use in printing or engraving.

If an ordinary photographic negative such as 5 is examined by reflected light, it is seen that the portion occupied by the silver image 8 appears matte while the clear gelatine remains smooth. The matte appearance is due to surface irregularities caused by the portions of silver grains just within the surface. It has been found that a cast of these irregularities may be made by taking such a negative and impressing a layer 6 of cellulose acetate or nitrate against the negative after first applying a film of solvent for the layer 6, on the surface of the negative. The negative 5 and the layer 6 are then pressed firmly into contact in any suitable manner as by rolling. The layer 6 is then allowed to remain in contact with the negative for a few minutes, after which it is removed, when it will be

found to have acquired an impression 7 of the original image 8 on the negative wherein the varying densities of the impression 7 are recorded in varying degrees of matte-ness. Since it is only the surface grains of the surface 8, which are active in producing the impression on the layer 6, very short exposures, if suitably developed, will yield the transfer. It has been found that the phenomenon is more marked on the toe portion of the characteristic curve of the photographic film. The method is particularly suitable for line subjects, and half-tones must be dealt with by the use of a screen as used in photo-engraving.

The layer 6 is now in condition for use as a printing surface after a relatively simple treatment. The surface 6 is rolled up or thoroughly moistened with a solution of

Glycerine-----	50 parts
Water-----	50 parts

The glycerine and water solution is now thoroughly wiped off. The surface of the layer 6 will now be found to be differentially selective to ink, the glycerine adhering to the grainy part, such as the design 8, and a suitable ink to the other portion. Such an ink is a regular lithographic ink.

If an ink impression is now taken off the layer 6 in accordance with the practice usually followed in printing, it will be found that if the original photographic design 8 was a negative, the final printing from the layer 6 will give a positive. The original negative 8 may therefore be reproduced in positive just as by photographically printing the negative. Reproductions can be made in large numbers at a very much lower cost.

The present method is differentiated from several similar methods of the prior art in that the present method yields a planographic printing surface, and the final printing surface 6 is not a cast from a relief. The method depends for its success on the fact that the minute granularity of the silver image in the original negative is transmitted by pressure through the layer

6 and then functions to produce a differential selectivity to ink.

In place of the glycerine and water mixture used for moistening the printing layer 5 6, the following is also useful:

Gum arabic-----	25 parts
Phosphoric acid-----	1 part
Water-----	100 parts

10 The type of ink which is successful is a lithographic black ink such as that known as "National offset black," made by the Eagle Printing Ink Company of New York, or an ink of the following composition:

15 Carbon black-----	24 pounds
Bronze blue-----	14 pounds
Cobalt dryer-----	2 pounds
No. 8 litho varnish-----	1 pound
20 No. 2 litho varnish-----	48 pounds

The present transfer method yields excellent semi-transparent scales for instruments such as shown at 9 in Fig. 2. It is also adapted for printing as shown in Fig. 25 3, wherein the subject to be printed may be transferred to a printing layer 10. This plate may be obtained by the method outlined and consists of a layer having a differential repellency towards printers' ink, 30 and capable of yielding planographic printed reproduction.

I consider as included within my invention all variations and equivalents coming within the scope of the appended claims.

35 What I claim and desire to be secured by Letters Patent is:

1. The method of transferring a print of an image from a planographic photographic record to a layer of cellulose derivative, which comprises softening the surface 40 of said layer and pressing said layer against said planographic record.

2. The method of transferring a print of an image from a planographic photographic record to a layer of cellulose derivative, 45 which comprises softening the surface of said layer, pressing said layer against said planographic record, and then removing the layer from the record.

50 3. The method of transferring a differentially granular image from a photographic element to a layer of cellulose derivative, which comprises softening the surface of said layer and pressing said layer 55 against said granular image.

4. The method of making a printing plate which comprises forming a silver photographic image in a gelatin layer, softening the surface of a sheet of a cellulose derivative composition, pressing said softened surface 60 against the image containing layer, removing the sheet, and moistening the latter to render it differentially selective to ink.

5. The method of making a printing plate 65 which comprises forming a silver photo-

graphic image in a gelatin layer, softening the surface of a sheet of a cellulose derivative composition, pressing said softened surface against the image containing layer, removing the sheet, moistening the sheet to 70 render it differentially selective to ink, rolling the sheet with ink, and taking a planographic impression therefrom.

6. The method of making a printing plate which comprises forming a planographic 75 photographic image in a gelatin layer, softening a layer of cellulose derivative, and pressing said softened layer against said planographic image.

Signed at Rochester, New York this 2nd 80 day of February 1931.

KENNETH C. D. HICKMAN.

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