

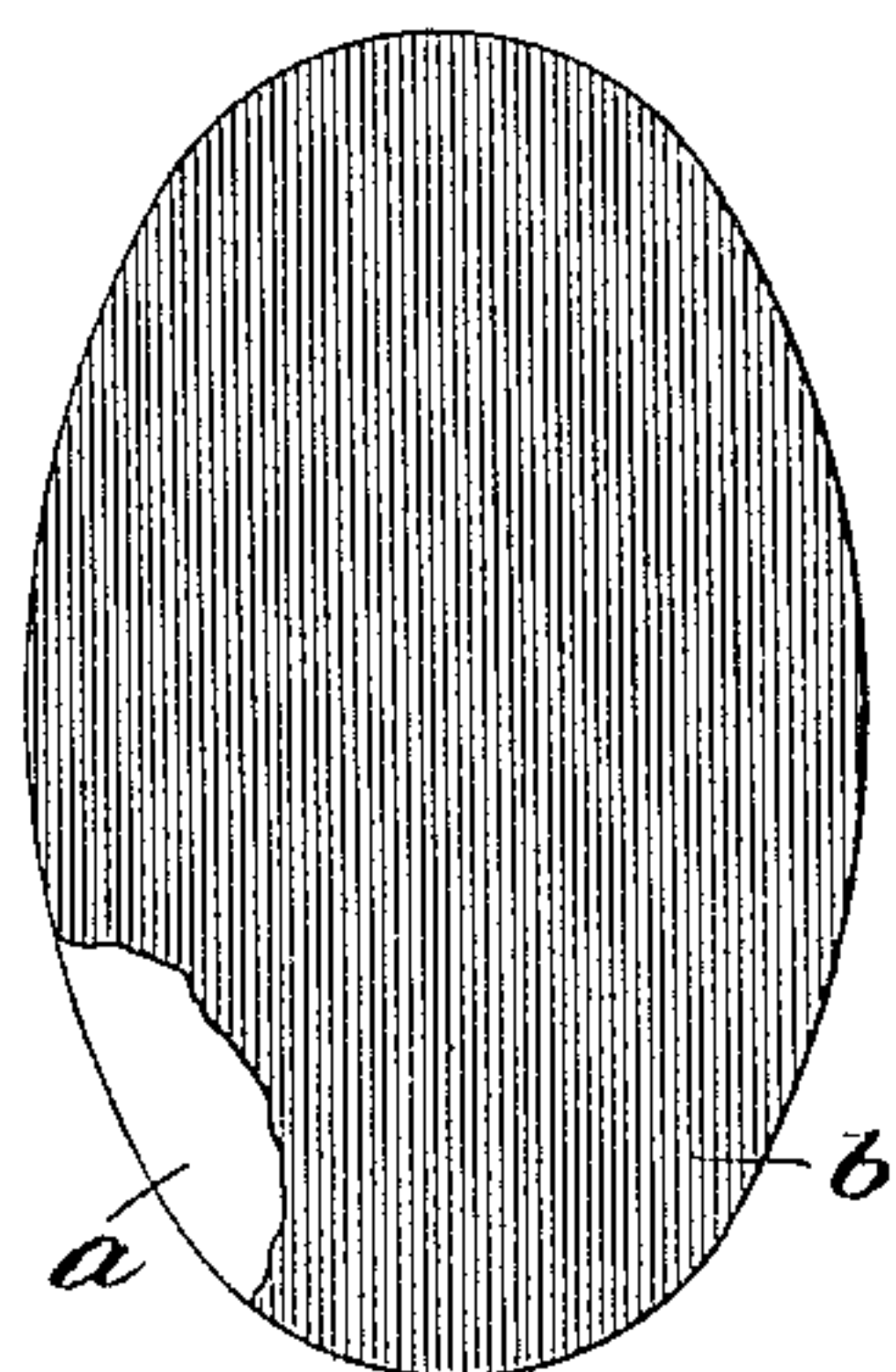
(No Model.)

J. JACOBSON.  
PROCESS OF PRODUCING RELIEF EFFECTS.

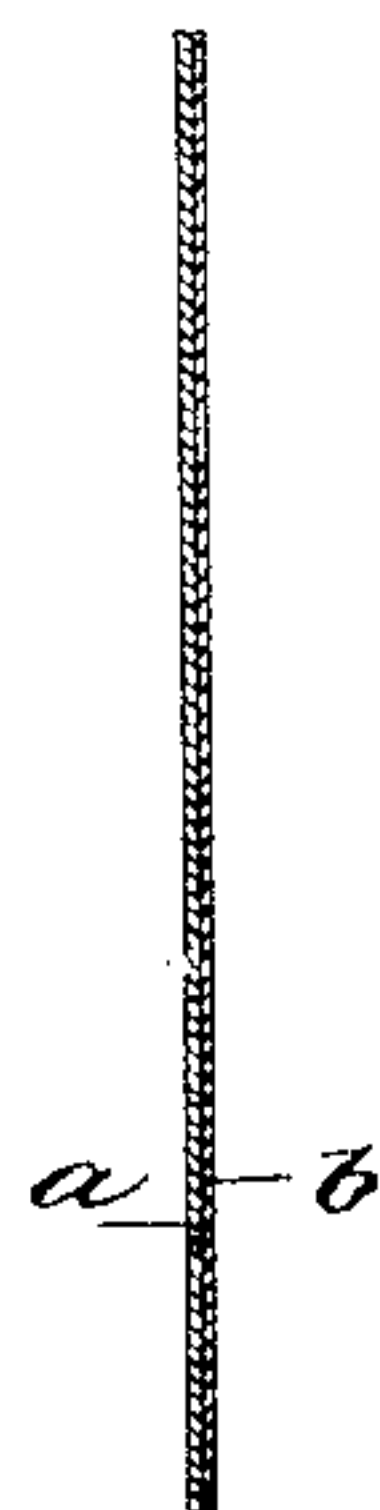
No. 584,550.

Patented June 15, 1897.

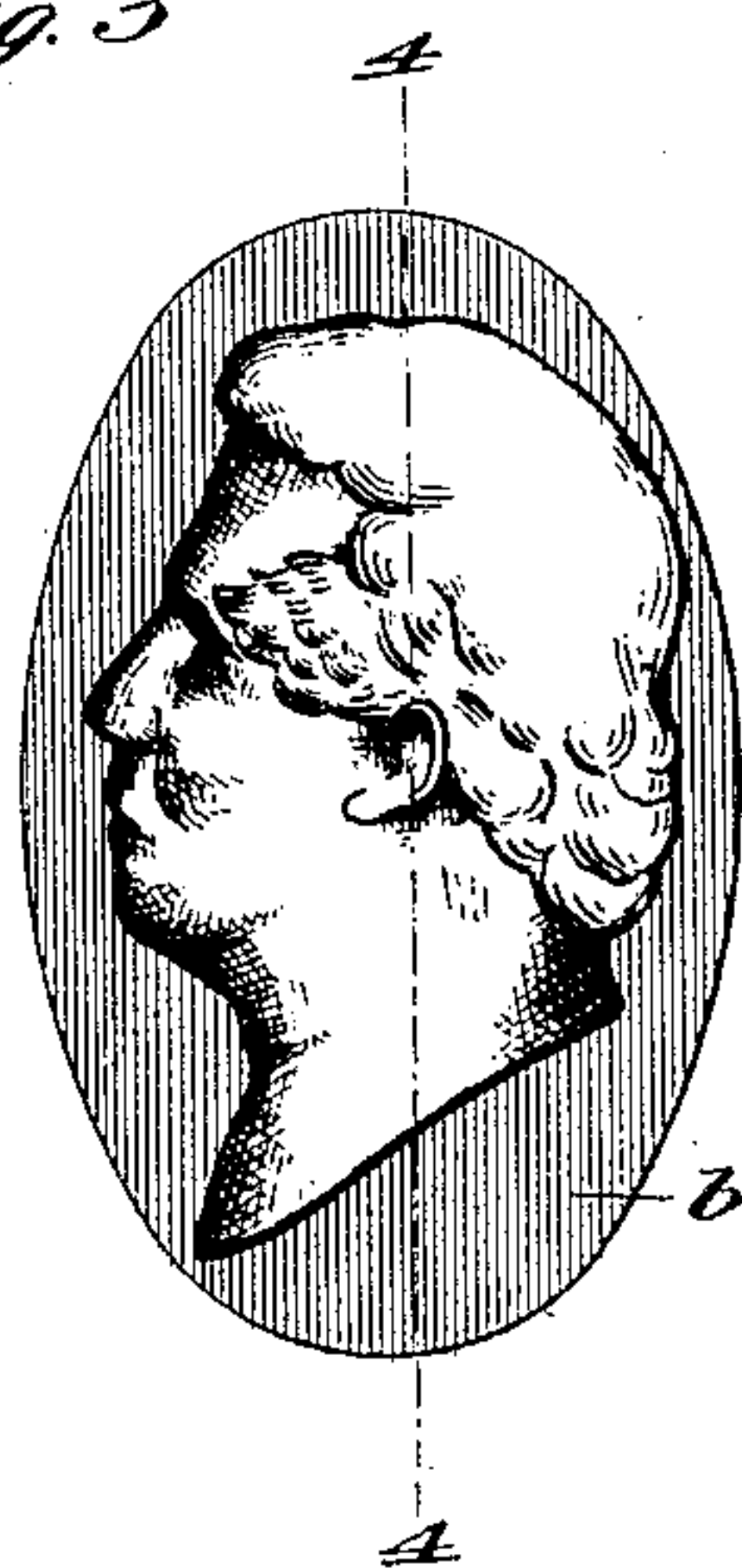
*Fig. 1*



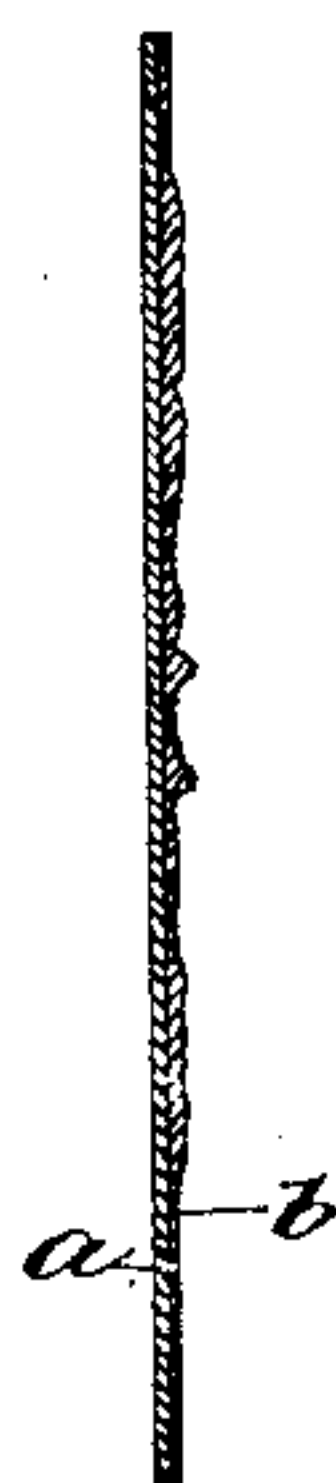
*Fig. 2*



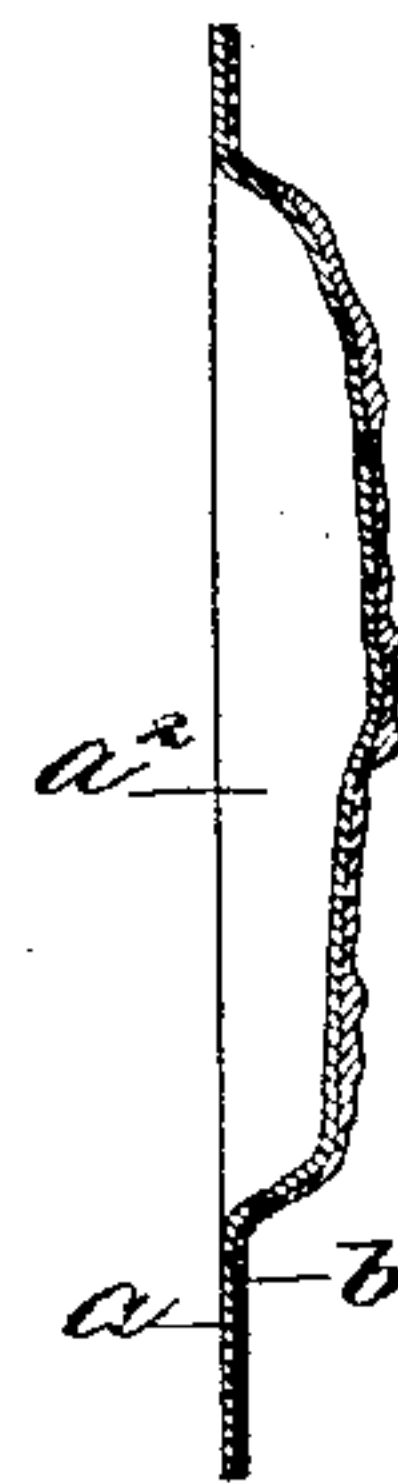
*Fig. 3*



*Fig. 4*



*Fig. 5*



*Witnesses:*

*Jas. J. Maloney.*  
*Martha P. Frost*

*Inventor.*

*John Jacobson.*  
*by Jn. P. Livmore*  
*att'y.*

# UNITED STATES PATENT OFFICE.

JOHN JACOBSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO WILLIAM B. LAMBERT, OF CAMBRIDGE, MASSACHUSETTS.

## PROCESS OF PRODUCING RELIEF EFFECTS.

SPECIFICATION forming part of Letters Patent No. 584,550, dated June 15, 1897.

Application filed October 20, 1896. Serial No. 609,480. (No specimens.)

*To all whom it may concern:*

Be it known that I, JOHN JACOBSON, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Photographic Plates, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention is embodied in a photographic plate of novel construction and in the method of producing by the use of such plate a form or matrix which is a reproduction in high relief of an object or group of objects and is capable of use in reproducing the image in high relief, for example, by forming from the said matrix a die for embossing which can be used to form the surface of an ordinary photograph of the same image or by forming from said matrix a mold in which medallions may be cast.

The photographic plate embodying the invention consists of a surface portion and a base or supporting portion, the former being adapted to have reproduced thereon by a photographic process a relief image and the latter being adapted to be mechanically manipulated to produce more prominent reliefs.

The surface portion of the plate consists of a film of sensitized gelatin capable of producing a relief image by the well-known swelled-gelatin process, which consists in photographic exposure and subsequent soaking in water, whereby the details are reproduced in comparatively low relief; and the base portion or support consists of flexible substantially non-elastic material capable of being mechanically manipulated and thus brought to the desired shape, but having sufficient rigidity to retain the shape in which it is left, lead being a material which is especially well adapted for the purpose. In carrying out the process in conjunction with such a plate an exposure is made in a printing-frame and the plate then soaked in water to bring up a relief image on the surface thereof in accordance with the well-known swelled-gelatin process. When the image has thus been produced and is apparent, the plate is worked up from the back—that is to say, manipulated by hand or with a suitable instrument in such manner that those parts upon

which the low relief is apparent on the surface of the swelled gelatin are pushed forward until the surface of the plate is brought to the desired prominence, the nature of the material which forms the backing being such that it will assume and retain the shape to which it is brought by such manipulation. It is obvious that this work can be done by a comparatively unskilled artist, since he has before him the low-relief image upon the surface of the gelatin to guide him in his operations, it being necessary only to work forward from the back those portions of the image which are to be prominently brought out.

In working from a portrait, for example, after the exposure is made and the low-relief image produced upon the surface of the plate the manipulator, observing the plate, will begin working out the back thereof, first following the general outlines of the head or face, and after that has been brought to the proper form the prominent features, as the forehead and nose, are worked out to a still greater extent until the proper shape is reached to correspond with that of what is known as an “embossed” photograph. After the plate has thus been worked up and finished it is used as a form for producing a cast, die, or other reproduction—as, for example, by molding a plastic material upon the surface of the plate to form a matrix, or by a galvano-plastic process or any other suitable method of producing a mold in which a die or medallion may be cast. Before the cast or die is taken from the matrix which has been produced as above described the said matrix should be again soaked in water, so that if the gelatin has dried down it will be brought up again into proper relief to reproduce the surface detail in the cast.

Figure 1 is a plan view of a plate embodying the invention, with part of the surface portion broken away. Fig. 2 is a section of the same. Fig. 3 is a plan view of the plate after it has been exposed and treated to bring out the image. Fig. 4 is a section taken in the plane of line 4 4 of Fig. 3, and Fig. 5 a section of the plate after it has been mechanically manipulated.

The plate consists of a base portion *a*, of lead or other flexible substantially non-elas-



tic material which can be easily manipulated and which will readily assume any form into which it may be worked and which has sufficient rigidity to retain such form, and a film  
 5 or surface portion *b*, of gelatin which has been suitably prepared so as to be sensitive to light, bichromatized gelatin being commonly employed. After the plate is thus prepared it is exposed in a printing-frame under a neg-  
 10 ative or in a camera or by other suitable photographic process, so that the gelatin is properly affected by the light, becoming more or less insoluble in water, according to the amount of light which has acted upon vari-  
 15 ous portions of the surface thereof. After the plate has been thus exposed it is soaked in water, so that the portions of the surface thereof which have not been rendered insoluble by the action of light will absorb water  
 20 and swell, thus forming a relief-image upon the surface of the plate, as indicated in Fig. 2. Those portions of the image reproduced which are represented on a flat surface, as the lights, will be represented on the plate in  
 25 relief, so that although the high relief of the main objects is not reproduced all the details of the picture are reproduced in low relief, yet with sufficient prominence to produce the proper effect when the main objects are  
 30 brought up in high relief.

In order thus to bring up the main objects, the back of the base portion *a* is manipulated by a suitable tool and worked outward, as indicated at *a'*, Fig. 5, thus bringing the  
 35 portions of the surface *b* which embrace the main object or objects into high relief, such manipulation requiring but slight skill and very little time, since the plate *a* is made, as stated, of material which responds readily to  
 40 such manipulations, while no careful detail work is required, since all the finer portions of the image are brought into sufficient relief by the photographic process.

For example, as shown in the drawings, the finer details, such as hair, eyebrows, &c.,  
 45 are perfectly reproduced by the photographic process, although this process does not reproduce the roundness or prominence of the object as a whole, such prominence being pro-  
 50 vided for in accordance with the present invention by the flexible base portions, which can be rounded out to conform to the main prominent configuration. It is obvious, moreover, that while but slight skill is re-  
 55 quired in carrying out the process there is room for the exercise of some judgment on

the part of the manipulator, which may in many instances be productive of better results than are obtainable from the purely photomechanical process, which in any event  
 60 is not capable of reproducing prominent reliefs.

While a portrait is herein shown to illustrate the invention, it is obvious that any picture may be reproduced in the same way, the details being provided for by the photo-  
 65 graphic process and the high relief produced by working up the plate. The plate made in this way may be used for the production of dies, which may be cast or otherwise pro-  
 70 duced therefrom, the said dies being practically perfect and adapted for use in embossing photographs, especially portraits, and in various other ways. For example, it is ob-  
 75 vious that plaster medallions may be very inexpensively produced by this process, it being also possible to mold sheets of celluloid or collodion on a die produced in this way so  
 as to obtain very striking effects.

What I claim is—

1. A photographic plate, consisting of a base portion of flexible substantially non-elastic material, capable of being shaped by pressure brought to bear upon it and having  
 80 sufficient rigidity to retain the shape thus produced, and a surface film of sensitized gelatin adapted to have a relief image produced thereon by photographic exposure and subsequent soaking in water, substantially  
 85 as described.

2. A photographic plate, consisting of a base portion of lead, and a surface portion of sensitized gelatin, substantially as described.

3. The herein-described process of producing a matrix, which consists in photographing  
 90 upon a sensitized gelatin film having a support or backing of flexible substantially non-elastic material, and soaking said film in water to produce a relief image thereon, and then mechanically shaping the said flexible  
 100 backing or support to bring out the main prominence of the design, using the low relief previously obtained on the gelatin surface as a guide, substantially as described.

In testimony whereof I have signed my  
 105 name to this specification in the presence of two subscribing witnesses.

JOHN JACOBSON.

Witnesses:

H. J. LIVERMORE,  
 N. P. FORD.