(No Model.)

J. JACOBSON.

RELIEF PHOTOGRAPH.

No. 584,552. Patented June 15, 1897.

Fig: 1.

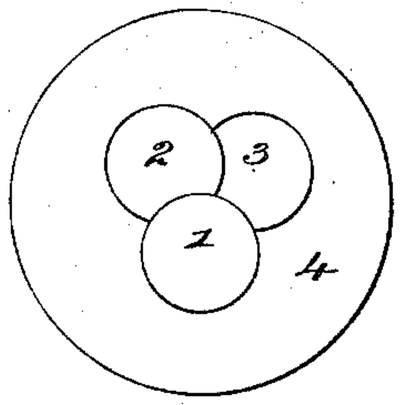


Fig: 2.

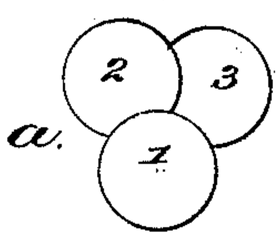


Fig 3.

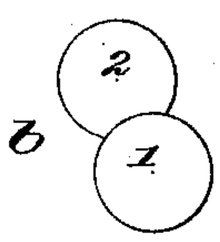


Fig: 4.

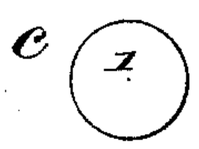


Fig: 5.

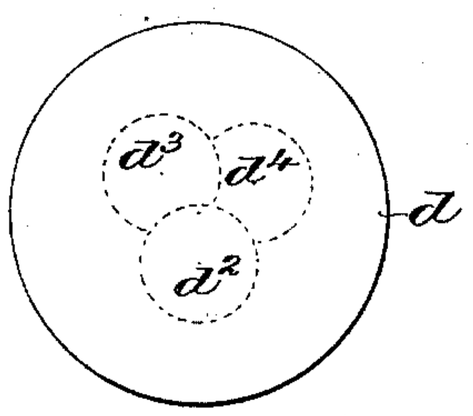
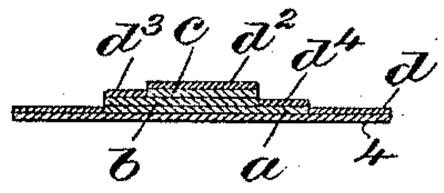


Fig: 6.



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UNITED STATES PATENT OFFICE.

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RELIEF-PHOTOGRAPH.

SPECIFICATION forming part of Letters Patent No. 584,552, dated June 15, 1897.

Application filed November 23, 1896. Serial No. 613,080. (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 Matrices and Methods of Producing the Same, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

The present invention is embodied in a matrix for producing medallions or other relief reproductions or for making a die to emboss photographs, lithographs, and other prints, and also relates to the process of building up a support for a film of sensitized gelatin which has already been exposed and mounting said film thereon in sections, so that the objects in different focal planes in the picture which is to be reproduced will be caused to stand out from each other upon the surface of the finished plate, which is then soaked in water to bring out the detail, dependent upon the effect of the light on the sensitized gelatin during the exposure thereof.

In carrying out the invention a film of sensitized gelatin supported upon a suitable backing-plate, preferably plate-glass, from which it can be afterward stripped, is exposed in a printing-frame to be affected by light reflected from or transmitted through the object or negative which is to be reproduced. The gelatin film modified by exposure, as is well known, is then stripped from its supporting-plate and mounted, as will be described, upon a new supporting-plate constructed in the following manner: A number of prints or reproductions of the object or picture which is to be reproduced in relief are taken, a number of such reproductions being made corresponding to the number of different focal planes containing objects or groups of objects which are to be brought out in relief. From one of said reproductions the background portion is cut away, following the outline determined by all of the objects collectively in front of the said background, and the portion remaining is then pasted upon the surface of another of said reproductions so as to register therewith, the paper or cardboard reproduction then having an additional layer of material standing out from the background. Another of the said reproductions is then cut out on the outline of the objects standing in front of those which are next to the background, and the portion cut out is then pasted upon the portion which has already been secured to the uncut reproduction which forms the bottom layer. This process being carried on as far as is desired and the objects being selected with a view to the prominence which they are desired to have in the finished article, the gelatin film is then also cut to register with the different parts of the plate thus produced and the different parts caused to adhere to corresponding parts of the surface thereof. The said plate is then soaked in water, so that the gelatin swells in the soluble parts, thus producing the surface detail in relief, the prominence of the objects in the foremost focal planes being secured by the prominence of those portions of the base upon which they are mounted. While the gelatin is still wet, so that it retains the relief-surface, a plaster mold is taken, which may be used for the production of medallions representing the object or dies to be used in embossing photographs thereof, or the said plate may be used in any other way which may be found desirable.

To carry the process still further, a plate of lead or similar malleable material may be formed in the mold taken from the gelatin plate and the surface thereof brought up into greater reliefs to show the prominent objects thereon by manipulating the plate from the back to bring out the objects in higher relief without altering the surface detail which has been produced by the action of light upon the gelatin.

In the drawings, which are in the nature of conventional diagrams for the purpose of illustrating the process, Figure 1 represents a print or reproduction of a series of circular disks arranged in different focal planes with relation to a background. Figs. 2, 3, and 4 represent the portions successively cut from similar prints to be applied to the surface of the print shown in Fig. 1, as hereinbefore described. Fig. 5 represents a gelatin film which has been sensitized and exposed to correspond with the print shown in Fig. 1, and Fig. 6 is a section of the finished gelatin plate before it is developed.

In Fig. 1 the disks numbered 1, 2, and 3 are arranged against the background 4, the disk 1 being in the nearest focal plane to the eye, the disk *a* in the next adjacent focal plane, and the disk 3 between the disk d^2 and the background. In producing this object in relief the disk 1 should obviously stand out most prominently from the main portion of the plate, the disk 2 somewhat less prominently, and the disk 3 the least prominently of all. In preparing the base or support for the gelatin film therefore the combined outline of the disks 1, 2, and 3 is first cut from one of the prints and forms the layer *a* of the finished plate, said layer *a* being shown as cut in Fig. 2, and the said layer *a* is pasted or otherwise secured to the background 4, so as to register with the outline of the same part shown thereon. The appearance of the reproduction which has thus been treated is obviously the same as before, except that where the objects are shown there will be one extra thickness of paper. So much of the picture as contains the objects 1 and 2 is then cut out from another print, in the shape indicated in Fig. 3, and pasted upon the surface of the portion *a*, the said part then forming the layer *b*, Fig. 6. The portion 1, Fig. 3, is then cut from another reproduction and pasted in its place upon the layer *b*, said portion forming the layer *c*, Fig. 6. As shown in said Fig. 6, therefore, the built-up background or base-plate is of varying thicknesses, that portion which shows the background proper being of only one thickness, that portion which shows the object 3 being of two thicknesses, that portion which shows the object 2 being of three thicknesses, and that portion which shows the object 1 being of four thicknesses. It is obviously not essential that the paper or cardboard used in building up the base should have the picture reproduced thereon, such reproduction being made merely for convenience in cutting the successive layers to the proper shape. The film of gelatin *d*, Fig. 5, which has been exposed, is then cut on the dotted lines into the parts d^2 d^3 d^4 to correspond with the exposed or upper surfaces of the layers *c*, *b*, and *a*, respectively, of the base-plate, and the different portions thereof secured to the surface of said plate in proper position, whereby the different portions of the gelatin plate will stand out in greater or less prominence, according to the focal planes which they represent, as shown in Fig. 6. The plate is then soaked in water to bring out the surface detail by swelling the gelatin and a cast taken having the characteristics of the combined plate, the prominent reliefs being reproduced in intaglio by the characteristics of the base portion and the surface details being reproduced by the characteristics of the gelatin film.

I claim—

1. A matrix consisting of a base or supporting portion of different thicknesses in different parts, the said parts conforming to the outlines of objects in different focal planes, and a film of sensitized gelatin which has been exposed and cut into sections conforming to the different parts of the said supporting-plate and secured to the surface thereof, substantially as described.

2. The herein-described method of producing a matrix which consists in exposing a film of sensitized gelatin and cutting said film into sections and mounting the said sections on a previously-prepared base or support differing in thickness in different parts to correspond to the objects in different focal planes in the group of objects or representations thereof to which the gelatin has been exposed, and finally soaking the combined plate in water to bring out the detail relief upon the surface of the gelatin, substantially as described.

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

JOHN JACOBSON.

Witnesses:
H. J. LIVERMORE,
JAS. J. MALONEY.