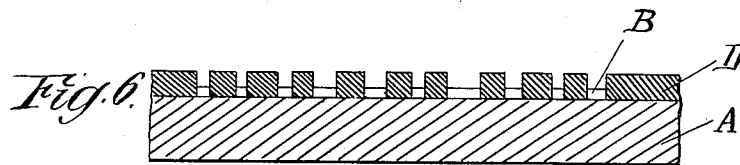
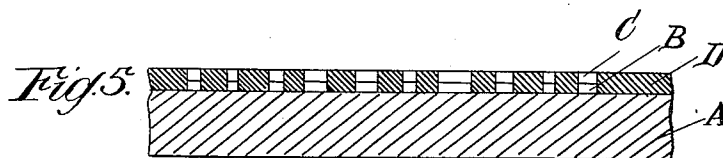
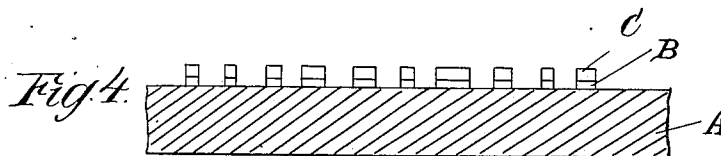
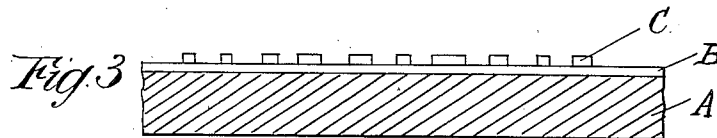
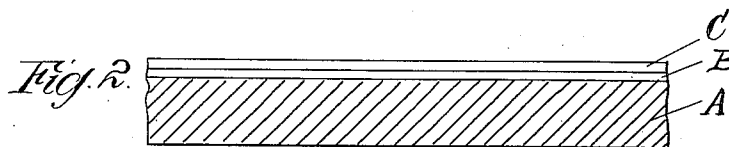
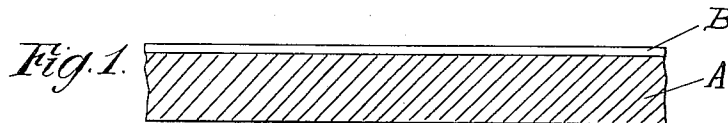


P. SCHUMACHER.  
 PROCESS FOR OBTAINING METAL PRINTING PLATES WITH SILVER SALT GELATIN EMULSION.  
 APPLICATION FILED DEC. 17, 1910.

1,042,827.

Patented Oct. 29, 1912.



*Witnesses:-*  
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*Peter Schumacher*  
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# UNITED STATES PATENT OFFICE.

PETER SCHUMACHER, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR TO  
CORPORATION OF KLIMSCH & CO., OF FRANKFORT-ON-THE-MAIN, GERMANY.

PROCESS FOR OBTAINING METAL PRINTING-PLATES WITH SILVER-SALT GELATIN  
EMULSION.

1,042,827.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed December 17, 1910. Serial No. 597,923.

*To all whom it may concern:*

Be it known that I, PETER SCHUMACHER, doctor of philosophy, chemist, a subject of the German Emperor, and resident of Frankfort-on-the-Main, Germany, with post-office address Grüneburgweg No. 129, have invented new and useful Improvements in Processes for Obtaining Metal Printing-Plates, with Silver-Salt Gelatin Emulsion, of which the following is a specification.

The present invention relates to an improvement in the process of producing printing plates by the medium of silver-salt-gelatin-emulsion. In the application of such an emulsion directly to metal-plates, it has been found absolutely necessary to first produce a protective intermediate layer on the plate to avoid a decomposition of the silver compounds of the emulsion. For this purpose a stratum of varnish or asphaltum has been proposed but I have found that a layer produced by chemical action by bathing the plate in a solution of suitable acids or salts is preferable, thus obtaining a greater speed, cheapness and simplicity of the process. Especially by treating the plates with a weak solution of chromic acid of say (0.2-2%) a perfectly dense layer of oxid is produced, but also other acids or salts (oxalic acid, ferrocyanid of potassium a mixture of alum and bichromate of ammonia) producing a close stratum on zinc or copper plates may be used.

After the protective layer is produced, the emulsion is applied and the sensitive plates after exposure are either treated with a developer hardening the lights of the negative, (for instance pyrogallie acid) or this hardening is done in a separate operation by treating the developed plate with a solution of bichromates. Now the unhardened portions of the gelatin film are dissolved in warm water and the negative thus obtained is turned into a positive, by applying fat inks or varnishes which stick only to the clear parts of the plates, while the rest of the gelatin-film can be removed by the action of weak solutions of acids and rubbing with a pad of cotton wool or felt. This inversion offers the difficulty that fat inks or varnishes do not adhere firmly to the intermediate layer and I have found it absolutely necessary to remove the protective

layer, which can be done by weak solutions of acids or acid salts, (for instance nitric or hydrochloric acid, perchlorid of iron, dissolved in water or spirit), the concentration and time of action of which must be regulated in such manner that the layer is removed without injuring the hardened gelatin. After this operation, inks or varnishes will enter into a firm connection with the metal and the plate can be etched or used for any kind of printing.

In order to explain exactly the details of the invention, in the annexed drawing the following different stages of the process are represented.

Figure 1 represents the printing plate with the protective layer thereon. Fig. 2 represents the same after applying the film of gelatin emulsion. Fig. 3 represents the exposed plate after development and after dissolving the unhardened parts in hot water. Fig. 4 represents the same after the protective layer is removed, Fig. 5 represents the same after the application of fat inks or varnishes and after the cleaning of the surface of the gelatin film, and Fig. 6 represents the plate ready for printing or etching after removing the gelatin film.

In the several figures, A represents the printing plate, B the protective layer, C the film of gelatin emulsion, and D the fat inks or varnishes.

What I claim is:

1. The process of making metal printing plates with gelatin emulsion which consists in treating the plate with a solution of substance giving an acid reaction, thereby providing the plate with a protective easily removable layer, applying the emulsion to said layer, exposing and developing the picture, removing the unhardened portions with warm water, applying fat inks or varnishes to the plate and removing the rest of the gelatin film.

2. The process of making metal printing plates with gelatin emulsion which consists in treating the plate with a solution of substance giving an acid reaction, thereby providing the plate with a protective easily removable layer, applying the emulsion to said layer, exposing and developing the design, removing the unhardened portions with warm water, removing from the printing

portion the protective layer of the exposed  
and developed plate by the action of acid  
substances, applying fat inks or varnishes  
to the plate and removing the rest of the  
5 gelatin film.

In testimony, that I claim the foregoing  
as my invention, I have signed my name in

presence of two witnesses, this sixth day of  
December 1910.

PETER SCHUMACHER.

Witnesses:

CARL WEIHE,  
EVA SATTLER.