

E. ALBERT.
PROCESS OF PRODUCING PRINTING PLATES.
APPLICATION FILED MAY 19, 1914.

1,430,347.

Patented Sept. 26, 1922.

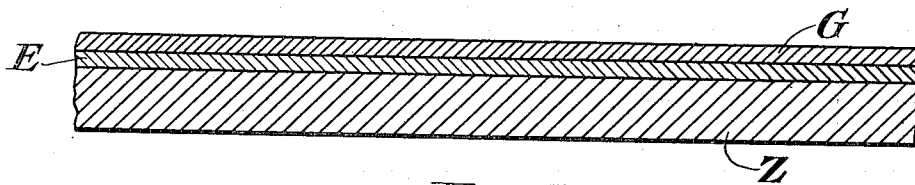


Fig. 1.

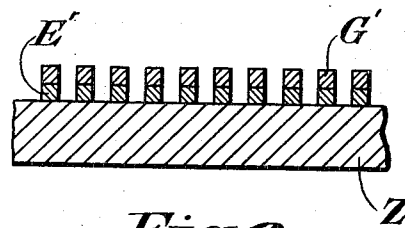


Fig. 2.

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EUGEN ALBERT, OF MUNICH, GERMANY.

PROCESS OF PRODUCING PRINTING PLATES.

Application filed May 19, 1914. Serial No. 839,663.

To all whom it may concern:

Be it known that EUGEN ALBERT, a subject of the Emperor of Germany, residing at Kaufingerstrasse 11, Munich, Germany, has invented certain new and useful Improvements in a Process of Producing Printing Plates, of which the following is a specification.

This invention relates to an improved process for the preparation of printing plates, and has especial reference to the making of the plate ready for etching, or for gumming if the plate is to be treated as a lithographic plate.

The object of the invention is to simplify the process of making a printing plate ready for the etching step, and to expedite the time of obtaining the finished plate.

Processes are already known in which the plate is provided with a double layer on its surface, such for instance as a bi-chromated-colloid film deposited on a varnish etching ground, the surface after being exposed to light being developed, touched up, washed, dried, and finally treated with a special liquid in order to dissolve those parts of the etching ground which have been left uncovered by the removal of the colloid film. In practice the execution of this process apart from the copying time, takes about ten minutes. The applicant as a result of many experiments has invented this present process which consists in using a solvent or such a mixture of solvents that by merely rubbing in the solution, or by baths of the same, he is able by a single treatment to effect the development both of the bi-chromated-colloid film and the etching ground. The copy on the plate is thereby rendered ready for immediate etching by only one manipulation with a single liquid.

The invention is diagrammatically illustrated in the accompanying drawings, in which Fig. 1 is a sectional view of a plate as it appears before it is treated to remove parts of either of the coating layers, and Fig. 2 illustrates the result of the one operation made as herein described, wherein the bi-chromated glue coating and the etching ground are removed.

In the drawings Z indicates the base plate, E the etching ground and G the light sensitive film which is commonly referred to as bichromated "glue."

According to this invention the bichromated glue layer G and the etching ground

E are removed in the single operation as follows:—

After exposure, the solvent liquid is applied and such liquid permeates the bi-chromated glue layer where it has not been exposed to light and dissolves the underlying etching ground. This loosens the overlying unexposed bichromated glue layer which swims off by itself as the solution of the underlying etching ground proceeds. The exposed portions of the bichromated glue protect the underlying parts of the etching ground from the action of the solvent liquid. Fig. 2 shows the result of this single treatment. In this view G' indicates the portions of the bichromated glue which have been rendered impermeable by the action of light, to the solvent liquid and E' the underlying portions of the etching ground which have been protected thereby and which remain adherent to the plate Z.

As the dark undissolved etching ground stands out as a strong picture from the light tone of the base plate, dyeing is not necessary. Further, as the development proceeds the picture may be seen to rise in the same manner as in the development of a photographic negative, so that error in the exposure may be corrected to a certain extent by regulating the period of developing.

An essential condition for the success of this treatment is that this solvent liquid should not only dissolve the unexposed colloid film and the etching ground, but that it should accomplish this before it has time to penetrate the exposed parts of the colloid film. To liquids which do not in themselves fulfil this condition may be added constituents which only with difficulty penetrate the colloid film or which harden it, and the said substances can be dissolved or mixed in the form of a fine emulsion.

The novel process, i. e. dissolving, after exposure to light, by manipulation with only a single liquid. The unexposed portions of a bichromated-colloid film deposited on an etching ground and the etching ground beneath the unexposed parts of the colloid film may be carried out in practice in several ways.

The selection of the dissolving liquid depends upon what material is employed for the etching ground.

For example, if a resin soluble in oils, or asphalt, is taken as the etching ground, a

preferred substance for dissolving it is tar-oil, because the water present in all coal tars acts as a constituent causing the colloid to swell and dissolving it.

5 There are many oils readily obtainable commercially which will answer this purpose, the most suitable being those which are soluble in, or which can be emulsified with, water.

10 By suitable treatment almost every oil can be made as an emulsion with the desired properties, for example this can be done by the addition of thick gum arabic solution, and an emulsion of gum arabic solution and etheric and fatty oils is a suitable combination.

If however materials are taken as the etching ground which can only be dissolved in alcoholic liquids, such for instance as 20 shellacs, the alcohol can be given the capacity to dissolve the unexposed parts of the colloid by mixing it with, for example small quantities of water, or glycerine, a useful property being also present by using glycerine 25 owing to its thick consistency which prevents the liquid penetrating the exposed parts of the colloid film. The desired end may be attained in another way namely by addition of a maximum percentage of a 30 colloid hardening substance. Aluminum chlorid is a good substance for use as a hardening agent.

With this process the old steps consisting of developing with water, touching up, 35 washing, and drying are eliminated, thereby saving nearly nine tenths of the time necessary, which is of the greatest importance; moreover the result of a single dissolving operation under this process is capable of 40 giving such sharpness of the printing elements as has hardly been attainable with the utmost time and care by previous processes. This is because under the old process 45 the limit lines, or borders, of the minute chemi-graphical spaces formed by the exposure were first subjected to attack in the development by water, and then once again during the removal of the uncovered etching ground lying between the exposed colloid 50 places.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The process of treating a plate having thereon a coating of etching ground and an 55 overlying light-sensitive bichromated colloid coating portions of which have been exposed to light to render them impermeable to a solvent liquid which process consists in subjecting such coated plate to the

action of a solvent for the etching ground which solvent also possesses the property of permeating the unexposed portions only of the light sensitive coating and of simultaneously removing both the unexposed portions of said sensitive coating and their underlying etching ground without removing 65 the exposed portions of the light sensitive film or their underlying etching ground, substantially as and for the purpose set forth.

2. The process of treating a plate having thereon a coating of etching ground and an overlying light-sensitive bichromated colloid coating portions of which have been exposed to light to render them impermeable 70 to a solvent liquid which process consists in subjecting such coated plate to the action of a solvent for the etching ground which solvent also possesses the property of permeating the unexposed portions only of the 80 light sensitive coating and of simultaneously removing both the unexposed portions of said sensitive coating and their underlying etching ground and of hardening the exposed portions of the light sensitive film 85 or their underlying etching ground, substantially as and for the purpose set forth.

3. The process of treating a plate having thereon a coating of etching ground of a substance soluble in alcohol and an overlying 90 light-sensitive bichromated colloid coating, portions of which have been exposed to light to render them impermeable to a solvent liquid, which process consists in subjecting such coated plate to the action of a liquid solvent for the etching ground, said solvent containing alcohol and aluminum chlorid, which latter is present as a colloid 100 hardening constituent, substantially as and for the purpose set forth.

4. The process of treating a plate having thereon a coating of etching ground formed from an alcohol soluble resinous substance and an overlying light-sensitive bichromated colloid coating, portions of which have been 105 exposed to light to render them impermeable to a solvent liquid, which process consists in subjecting such coated plate to the action of a liquid solvent for the etching ground, said solvent containing alcohol and 110 aluminum chlorid, substantially as and for the purpose set forth.

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

EUGEN ALBERT.

Witnesses:

A. V. W. CORLE,
ABRAHAM SHLESINGER.