

(No Model.)

W. S. PHILLIPS.
PROCESS OF MAKING NEGATIVE PLATES.

No. 539,368.

Patented May 14, 1895.

Fig. 1.

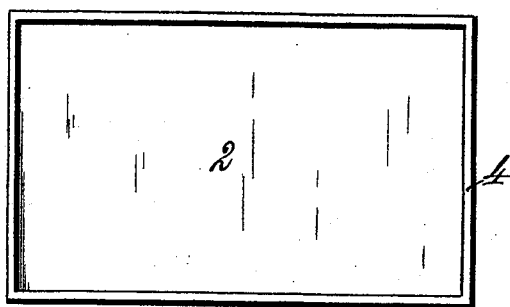


Fig. 2.



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PROCESS OF MAKING NEGATIVE PLATES.

SPECIFICATION forming part of Letters Patent No. 539,368, dated May 14, 1895.

Application filed November 8, 1894. Serial No. 528,225. (No specimens.)

To all whom it may concern:

Be it known that I, WALTER S. PHILLIPS, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented new and useful Improvements in Negative Plates and the Process of Making the Same, of which the following is a specification.

My invention relates to an improved process of making negative plates, and has for its object the production by mechanical means of a negative by means of which zinc etching plates, photo-wood engraving blocks and other printing and engraving surfaces, and photographically printed copies of the negative, may be produced without first exposing a sensitized plate in a camera before the design to be reproduced and developing and fixing the plate thus obtained.

To these ends my invention consists in the improved process of making negative plates hereinafter fully described and afterward definitely pointed out in the claims following the description.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a negative prepared by my improved process, and Fig. 2 is an enlarged sectional view thereof.

Heretofore, in the preparation of zinc-etching plates, photo-wood engraving blocks, and similar printing and engraving surfaces, it has been the common practice to first make a pen or other line drawing with black ink upon white, smooth paper, or other similar background, and then by means of a camera and a sensitized plate, make a photographic negative of the drawing, it being necessary after exposing the plate, to develop the same and fix it in a dark room in a manner well known to photographers. The negative thus obtained is then employed for printing by means of solar or artificial light the design upon a sensitized zinc plate or wooden block, the surface of the plate or block being finally treated chemically or by hand to remove those parts of the surface that form no part of the design. A serious objection to this method is the time consumed in exposing, developing, fixing, washing and drying the negative, and the expense connected therewith. By means of my improved process, I dispense with the

use of sensitized plates and the camera, and the developing, fixing and washing of the plates, and produce the drawing or design upon the plate by mechanical means, thus effecting a great economy in time, labor and expense.

When the plate is to be prepared for immediate use I take a smooth, clean glass or other suitable transparent plate and precipitate thereon a smooth body or film of carbon by holding the plate over a gas or lamp flame or other flame of a carbonaceous nature, or by any other means by which a smooth, dense but thin film of carbon will be deposited upon the plate. Care must be taken to perform this operation in such manner that no particles of dust or other matter floating in the atmosphere be allowed to settle on the carbon surface and adhere to it, otherwise the particles will penetrate the carbon film and make transparent spots or flaws in the otherwise opaque body of the carbon film which will be reproduced in the photographic print subsequently made from the negative.

Having obtained a carbon film of the requisite thickness, it is allowed to thoroughly cool and the film is then flowed with sulphuric ether, or other suitable volatile liquid, which causes the carbon to settle upon the glass in a smooth, dense and compact film, which, when cut or scored by any suitable pointed instrument will give a smooth edged, clear and sharply defined line. The plate is flowed with the sulphuric ether by dropping a few drops upon one corner of the plate and slightly tilting or inclining the plate so as to cause the ether to flow gently over every portion of the film and dampen its entire surface, care being taken not to incline the plate sufficiently to permit the ether to "wash" the film. When the plate has become perfectly dry, which will be in an exceedingly brief period of time, the ether being very volatile, it is ready to receive the drawing or design. This is executed by means of a sharp, pointed stylus, pen, or other pointed tool, which is used as a pencil to draw the design upon the carbon film, the instrument being caused to cut through the film, leaving the design delineated thereon in smooth, sharply defined, transparent lines. After the drawing has been completed a dilute solution of collodion is

flowed evenly over the entire surface of the film in the same manner in which the sulphuric ether has been applied thereto. The collodion solution and carbon unite to form a thin, smooth film of rubber-like consistency, the body of which is perfectly opaque, but through which the drawing or design appears in clear, transparent lines, thus producing a negative, from which a photograph may be printed upon sensitized paper, zinc or wood by solar or artificial light in the well known manner.

The drawing may be printed directly from the negative thus prepared, and the film may, in such case, be permanently fixed upon the glass by applying a solution of any suitable or preferred gum to the edge of the film before the ether applied thereto has completely evaporated, or the film may be stripped from the glass after the collodion has dried and be transferred to a transparent sheet of celluloid, in the same well known manner in which stripped films are made from the ordinary photographic dry plates.

Referring to the drawings, the numeral 1 indicates the glass plate; 2, the film of carbon deposited thereon, and 3 the final protective coating that is applied to the carbon-film after the picture or design has been delineated upon the film, and which serves to protect the latter from being rubbed, smeared or abraded.

In Fig. 1, the numeral 4 indicates the coating of gum applied around the edges of the plate and carbon film for permanently attaching the latter to the plate.

The negative made in the manner above described may be employed in the same manner as an ordinary photo-negative from which to print upon sensitized paper of different kinds, or it may be used to print upon a sensitized zinc plate to make a photo-reproduction for zinc etchings, or in the same manner may be used with a sensitized block of box-wood on which a photo-line drawing may be printed to be engraved by hand, or it may be employed in any of the photo-mechanical or photographic processes in which a negative is required, in all of which a great economy in time, labor and expense is effected by dispensing with the necessity of making a photographic reproduction of the drawing by means of a camera and sensitized plate and the subsequent chemical treatment and washing and drying of the plate, the drawing being made directly upon the negative plate.

The plate when prepared in the manner above described is intended for immediate use, but in preparing plates for shipment and transportation or to be preserved for future use I treat them in the following manner: A clean glass plate is provided with a film of carbon in the manner before described and is flowed with a saturated solution of pitch and alcohol. In making this solution I prefer to use raw pitch gathered from fir trees, though pitch from any species of pine trees may be used. The pitch, after having been exposed

to the atmosphere until it has become hard enough for the purpose, is reduced to a powder, care being taken, as far as possible, to keep out all impurities, and the powder is then dissolved in alcohol, a saturated solution being made. The solution thus prepared is flowed over the carbon film, the plate being held nearly level so that the pitch solution will spread without running until it covers the entire surface of the carbon film. This condenses the soot deposit which is absorbed and incorporated in the pitch film and forms a permanent opaque body film on the glass. When the pitch has dried sufficiently, that is to say, when it has ceased to run or spread, and has a sticky consistency, it is washed over with spirits of turpentine, which softens the film, and is laid away to dry in a suitable place where no dust can settle upon it. When dry the plate is ready to be etched and may be kept for an indefinite period before receiving the etched design, and may be safely packed and transported without liability of injury to the film by abrasion or the like, and is unaffected by the atmosphere, the pitch film being practically waterproof. The film thus prepared is firm but soft enough to be easily cut with the etching point. Very fine lines can be cut in the film and better effects obtained for illustrative purposes than can be produced by the usual method of photographically reproducing drawings.

Instead of proceeding in the manner above described, the glass plate may first be flowed with the pitch solution to form a thin coating and allowed to dry until of a sticky consistency and the carbon film applied thereon in the manner before described until an opaque coating is formed on the coating of pitch. After the plate has become cool sufficient spirits of turpentine is flowed very gently over the carbon to condense the same and the plate set aside for about twenty-four hours at the expiration of which time it will be ready for use; or the plate may first be flowed with the pitch solution and then immediately washed with alcohol by flowing the latter thereover. The alcohol evaporates in a few moments leaving a clean, smooth film of pitch on the surface of the plate. The carbon film is then deposited thereon, as before, and cooled, and flowed with a volatile liquid, such as ether, alcohol, or the like, to condense the carbon, and as soon as the liquid has evaporated, the carbon film is flowed with the pitch solution, and when the latter has dried to a sticky consistency it is flowed with turpentine which prevents the pitch from hardening too much.

Instead of the pitch solution above described I may use a tincture of aloes to form a protective coating for the carbon film. The glass plate is first coated with a carbon film in the manner before described and when cool is flowed with the tincture of aloes and dried, after which it is flowed with ether, or other volatile liquid, and when dry is finally

flowed with spirits of turpentine. The plate will be ready for use as soon as dry; or both aloes and pitch may be employed. The plate is first flowed with the tincture of aloes and drained of all the tincture that will run easily and the plate allowed to dry in a temperature of from 70° to 90°. When the film is dry enough to resist light rubbing it is flowed with the pitch solution and immediately thereafter flowed with alcohol or ether and the plate dried. The carbon film is then deposited thereon, as before, and when cooled is flowed with ether, or other volatile liquid, to condense the carbon, and when dry, is finally flowed with spirits of turpentine.

The plates treated with a solution of pitch or the tincture of aloes are used in the same manner as that first described, but when the film is to be stripped or transferred from the glass to some other backing then it must be flowed with collodion as before described.

Having described my invention, what I claim is—

1. The process herein described of preparing plates for making negatives, consisting in depositing upon a clean transparent plate a film of carbon and then flowing said film with a volatile liquid, for the purpose specified.

2. The process herein described of making negatives, consisting in depositing upon a clean, transparent plate a film of carbon, flowing said carbon film with a volatile liquid, cutting through the film thus formed a design or picture and finally applying to said film a protective coating, for the purpose specified.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

WALTER S. PHILLIPS. [L. S.]

Witnesses:

L. E. NICKELS,
R. L. HODGDON.