

UNITED STATES PATENT OFFICE.

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METHOD OF MAKING HALF-TONE PLATES.

940,808.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, JOHN HARTNETT, JR., a citizen of the United States, and residing at West Arlington, county of Baltimore, State of Maryland, have invented certain new and useful Improvements in Methods of Making Half-Tone Plates, of which the following is a specification.

This invention relates to an improved method of making printing plates of the kind commonly known as half-tone plates. This class of plates have usually been made with the aid of a screen but by my improved process the screen is dispensed with and the cost of manufacture of the plates very much reduced. The process comprises the following steps and procedure: I first prepare a solution of pure crude rubber by dissolving rubber in any suitable solvent, and add to this solution a small percentage of asphaltum or coal tar. A smooth metal plate preferably a copper plate, is coated with a film of the above solution and then thoroughly dried. Substantially all moisture should be expelled from the film and the plate may be warmed or heated to a sufficient degree for this purpose. The preparation of the solution and the coating of the plate should be performed in a dark room and the plate should be kept away from light until used. The metal plate thus sensitized is placed in a suitable frame face to face with a transparency (usually a glass negative) of the object to be represented on a half-tone plate and the transparency is then exposed to the light, either natural or artificial. The time of exposure will depend upon the nature of the transparency, the intensity of the light, and the effect which it is desired to produce on the plate. The asphaltum or coal tar in the film will be rendered soluble in acetone in proportion to the amount of light to which it is subjected. After exposure the plate is developed in an acetone bath which will dissolve out the asphaltum or coal tar and more or less of the rubber on those portions of the plate that have been subjected to the light and in proportion to the amount of light the different parts of the plate have received. This will leave the different parts of the film on the plate more or less porous in direct proportion to the amount of light which they have received

through the transparency. The plate thus developed is subjected to any suitable etching bath, for instance, a bath of ferric chloride, which will attack the metal through the pores in the film, producing in the metal a minutely pitted surface, corresponding in roughness or depth of pitting to the clear and shaded portions of the transparency. After subjecting the plate to the etching bath for a suitable time to cut it to the desired depth, it is removed and cleaned and may then be used as a printing plate to reproduce the subject of the negative or other transparency.

It will be evident that this process may be varied in detail and different results produced, as may be desired. Thus the percentage of asphaltum or coal tar, in the rubber solution may be varied; also the thickness of the coating of the sensitized plate, which may consist in one or more layers or films. The result may also be varied by varying the time of exposure to light and the time of treatment in a bath. It is to be understood that while asphaltum and coal tar have been particularly specified herein any equivalent material which is sensitive to light and which may be dissolved out of the film after exposure to light may be used.

Having described my invention what I claim and desire to secure by Letters Patent is,

1. A method of making half-tone plates which consists in coating the plate with pure rubber containing a small percentage of material adapted to be rendered soluble by the action of light, exposing said plate to the action of light passing through a transparency of the object to be produced, and then dissolving out said material to render the coating porous, and finally etching the plate through the pores of the film with a suitable material.

2. A method of making half-tone plates which consists in coating a metal plate with a film of rubber containing a small percentage of asphaltum or coal tar, subjecting said film to the action of light passing through a transparency of the object to be reproduced, subjecting the film to an acetone bath to render the same porous, and finally subjecting the porous film to a suitable etching material.

3. A method of making half-tone plates which consists in coating a metal plate with a film of rubber containing a small percentage of asphaltum or coal tar, heating the
5 plate to thoroughly dry the film, subjecting said film to the action of light passing through a transparency of the object to be reproduced, subjecting the film to an acetone bath to render the same porous, and

finally subjecting the porous film to a suitable etching material. 10

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

JOHN HARTNETT, JR.

Witnesses:

WILLIAM B. EHLEN,
WM. E. FERGUSON.