O. DODGE.

PROCESS OF PRODUCING PRINTING SURFACES.

APPLICATION FILED APR. 1, 1912.

1,118,479. Patented Nov. 24, 1914.

Fig. 1.

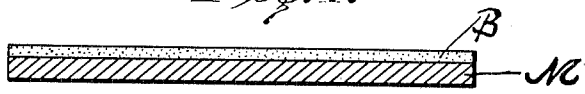


Fig. 2.

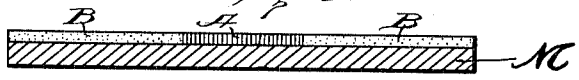


Fig. 3.

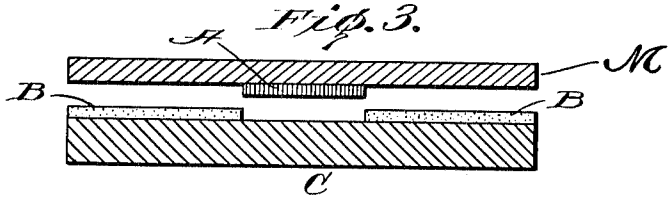


Fig. 4.

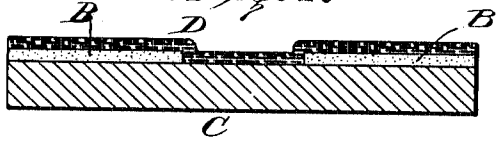


Fig. 5.

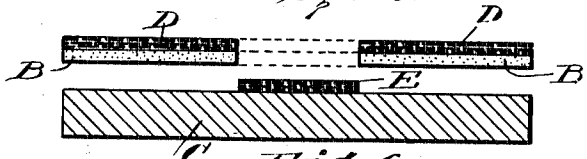


Fig. 6.

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UNITED STATES PATENT OFFICE.

OZIAS DODGE, OF NORWICH, CONNECTICUT.

PROCESS OF PRODUCING PRINTING-SURFACES.

1,118,479. Specification of Letters Patent. Patented Nov. 24, 1914.

Application filed April 1, 1912. Serial No. 687,614.

To all whom it may concern:

Be it known that I, OZIAS DODGE, a citizen of the United States of America, residing in Norwich, in New London county, and State of Connecticut, have invented a new and useful Improvement in the Process of Producing Printing-Surfaces from Photographic Images, of which the following is a description.

The objects of my invention are—1st. To produce a typographic, or intaglio, or lithographic printing surface, or the like, without sensitizing the printing surface or transferring the inked image to it. 2nd. To produce an image in ink in direct contact with a metal or other surface. 3rd. To produce a gum image of hydrated and non-hydrated gum on the surface. 4th. To produce an image for printing of high excellence, in shorter time, in a simpler manner, and of lower cost.

Other objects will appear from the hereinafter description.

In the accompanying drawing made part of this specification, Figure 1 is a magnified section of a gum film and paper support M; Fig. 2 is a like section of the same sensitized gum film after exposure to light on the same paper support, M showing a fragment of gum surface A which has been exposed to light and rendered nonhygroscopic, and adjacent fragments of gum surface B and B in their original state having been protected from light by the opaque areas of the photographic image. Fig. 3 is the inverted paper support of Fig. 2 first applied to a metal plate C and lifted away, carrying with the paper the nonhygroscopic fragment A, and leaving on the plate the adjacent hydrated fragments B and B. Fig. 4 is the plate C still bearing the hydrated gum B and B, the whole inked over with the film of greasy ink D. Fig. 5 shows fragments B and B of the hydrated gum, the imposed ink lifted and washed away. Fig. 6 is the metal plate with the ink image, with a fragment of ink E left in immediate contact with the plate C forming a part of the figure on a permanent printing surface, for my process creates on the plate or permanent supporting surface the final printing or decorating image in all its delicacy of line, stipple, grain, light and shade.

I will now describe in detail the preferred way in which I accomplish this. I employ a special paper prepared from a light, thin paper stock, preferably from a mixture of linen and wood-pulp, which has been floated on a solution of dextrin, albumen and starch, in the proportion of dextrin 25, starch 3, and albumen 7, the solution being 100 parts water to ten of this mixture of gums; but stronger or weaker solutions may be employed, according as more or less ink is required for producing the printing surface. This gum paper is sensitized by floating upon a three to ten per cent. solution of bichromate of potash or ammonia, soda, or of any substitute thereof. On this paper thus sensitized I form a photographic gum image, which consists of areas in which the gum has become nonhygroscopic by the action of light, and other areas, which being protected from the action of light by the opaque areas of the negative, are still hygroscopic. The paper is then floated upon water, which renders the gum hydrated wherever the light has not acted upon it; and where the light has acted upon it, the gum is not capable of being hydrated, and will remain attached to the paper in the next step of the process.

While still wet, I lay the paper on the metal or on the lithographic stone, and with a roller or otherwise, gently press it thereon, and then peel it off, whereby the image in hydrated gum is transferred to the metal or stone, leaving the surface of the metal or stone directly accessible to ink, in various areas, and inaccessible to ink in the remaining areas.

This plate after drying is entirely covered with greasy ink. The inked metal or stone is then placed in water, when the soluble gum separates from the surface, carrying with it the overlying film of ink, leaving the photographic image in greasy ink in direct contact with the metal or stone, capable of direct printing by lithographic presses, or the metal may be etched for relief or intaglio printing.

The applications of this improved process are many in the art of printing, but I have made other applications, and still others will readily occur to those skilled in the art. For example, I may apply this image to ivory, gold and silver products, gun-metal products, glass, pottery, on wood, leather fabrics, and textile fabrics, and the like.

It will be recognized at once by those

skilled in the art that my improved process differs from all those where an image is transferred from the surface on which it is made to the surface on which it is used or to which it is permanently affixed, either for printing or for decoration.

It will be understood that the ink employed in forming my image on the plate which forms a permanent part of the plate, is to be distinguished from the printing ink applied to the surface in reproducing images for newspaper work; and my printing surface may be the final printing surface for lithographic work, or the ground for etching.

I contemplate a large use of my invention in the work of rapidly making pictures for newspaper reproduction; and I thus produce a printing image of greater excellence, from an existing picture or sketch, in eight minutes and a half, and eliminate three etching processes and several photographic processes, and all the steps may be performed on the office desk, without presses or mechanical devices.

I thus attain all the foregoing objects by the simplest means, and at a minimum cost.

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

1. The process of producing figured surfaces, which consists in producing a hydroscopic gum image by photographic means, transferring the same to a solid supporting surface by gentle pressure only and without solution, forming an image around the gum image, in direct contact with the solid supporting surface and removing the gum.

2. The process of producing figured surfaces on metal, which consists in producing a hygroscopic gum image by photographic means, transferring the same to a metal plate by gentle pressure only and without solution, forming an image around the gum image in direct contact with the plate, removing the gum image, and etching the plate.

In witness whereof, I have hereunto set my hand and affixed my seal, at the city, county and State of New York, this 30th day of March, 1912.

OZIAS DODGE. [L. S.]

In presence of—
FRANK EUFEMIA,
JOHN J. RANAGAN.