

Dec. 17, 1929.

O. KOHN

1,740,423

INTAGLIO OFF-SET LITHOGRAPHIC PLATE AND PROCESS OF MAKING SAME

Filed Jan. 25, 1928

Fig. 1.

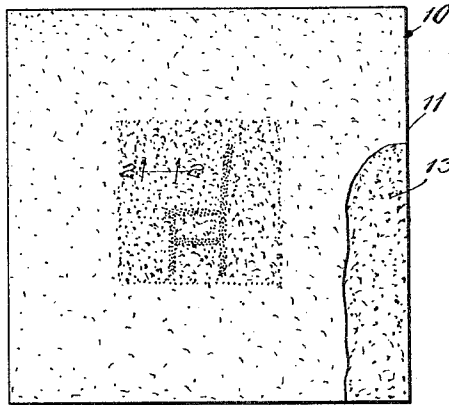


Fig. 2.

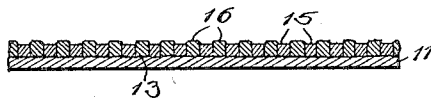


Fig. 3.



Fig. 4.

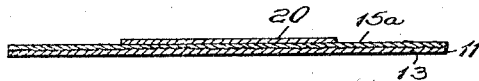
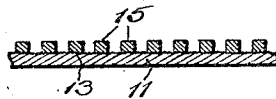


Fig. 5.



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INTAGLIO OFFSET LITHOGRAPHIC PLATE AND PROCESS OF MAKING SAME

Application filed January 25, 1928. Serial No. 249,427.

My invention relates broadly to printing devices and more particularly to offset-lithography.

A particular object of the invention is to provide an improved intaglio plate whereby reproductions can be made in one or more colors, of line or pencil drawings, of type matter, and in half-tone photographs, wash drawings or other copy which is photographed through a half-tone screen or a mezzotint, etc.

Another particular object of the invention is to provide an improved method for producing intaglio plates of the character described.

One form of the invention is practiced by first producing a plate which has the printing surfaces in relief and is typical of those commonly employed to print half-tones by offset-lithography, and then plating the relief plate with some substance, preferably nickel, in such manner that it becomes an intaglio plate.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel method and the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is an elevation of an intaglio plate embodying my invention;

Fig. 2 is a greatly enlarged section taken on line 2—2 of Fig. 1;

Fig. 3 is a transverse section taken through a plate which is adapted to be used in the production of an intaglio plate embodying my invention;

Fig. 4 is a transverse section taken through the plate shown in Fig. 3, the plate being coated and having a negative superimposed upon said coating; and

Fig. 5 is a greatly enlarged fragmentary section taken through the plate shown in Figs. 3 and 4 after the plate has been treated

so that it has become a relief plate for printing half-tones by offset-lithography.

Referring for the present to Figs. 1 and 2 wherein I have shown an intaglio plate which embodies my invention and is adapted to print half-tones by offset-lithography, the reference character 10 designates the improved device as a whole and the reference character 11 designates a plate or sheet of zinc or any other suitable material. The zinc plate 11 is preferably provided with a stippled or grained surface 13 in accordance with the common practice in this art and adhering to the stippled or grained surface 13 are spaced dot printing particles 15 which preferably comprise albumen mixed with ammonium bichromate, or the equivalent. Also adhering to the stippled or grained surface 13 is a coating 16 of some suitable substance, which coating is of greater thickness than the particles 15 and therefore, permits the plate to be used for intaglio printing.

The coating 16 preferably consists of nickel although I contemplate using copper, mercury, chromium and zinc, or other metal for this purpose. It should be understood, however, that I am limited to the use of nickel, or any other metal, for this purpose only to the extent indicated in the appended claims.

It may be mentioned that the outer surface of the coating 16 is preferably grained or stippled similarly to the surface 13 as the coating 16 is relatively thin and is preferably applied to the stippled surface 13 in such manner that the stippling or graining on the surface 13 is duplicated on the outer surface of the coating 16.

When an impression or reproduction is to be made from the intaglio plate 10, the stippled or grained surface of the coating 16 is preferably moistened with water, or the equivalent, and then an inked roller, or the equivalent, is applied to the plate in such manner that the exposed surfaces of the dot printing particles 15 are inked. An impression is then made from the plate upon a rubber blanket which is then used to print the reproduction upon a sheet of paper, or the equivalent.

In Figs. 3, 4 and 5, I have illustrated the

manner in which I practice my improved method to produce the intaglio plate 10. Fig. 3 represents the above-mentioned plate 11 which is preferably provided with the stippled or grained surface 13. As shown in Fig. 4, a coating 15^a is preferably applied to the stippled surface 13, the coating 15^a preferably comprising albumen mixed with ammonium bichromate, or the equivalent. Superimposed upon the coating 15^a is a photographic negative 20, the arrangement being such that when the removable plate 11, coating 15^a and negative 20 are exposed to the light, certain portions of the coating 15^a are hardened to provide the aforementioned dot printing particles 15. This process is well known to those skilled in the art and it is not necessary to give a detailed description thereof. However, it may be mentioned that after the negative has been removed from the coating 15^a, ink is preferably applied to the coating and the unhardened portions of the coating are preferably wiped from the plate so that a plurality of relatively hard dot printing particles 15 remain upon the plate, the top surface of each particle 15 being inked. Of course, it is understood that in this instance, it is assumed that the negative 20 has been obtained by photographing some object, drawing or the equivalent, through a screen. It should also be understood that a mezzotint may be employed in place of the screen and that line or pencil drawings may be reproduced without photographing them through a screen.

After the relatively soft portions of the coating 15^a have been removed from the plate 11, the stippled surface 13 of the plate 11 is preferably etched by subjecting it to some suitable acid in a manner well known to those skilled in the art. After the surface 13 has been etched in this manner, the plate 11 together with the dot printing particles 15 formed thereon provides a relief plate of the type commonly employed to print half-tones by offset-lithography.

In the next step of my improved method, I preferably plate the stippled surface 13 with some suitable substance. This substance is preferably nickel although other substances may be used. The nickel does not adhere to the inked surface of the dot printing particles 15 and the thickness thereof is such that the printing surfaces of the particles 15 are disposed below the outer surface of the nickel coating. The nickel is preferably provided to the stippled or grained surface 13 by electroplating. Obviously, an intaglio plate is provided and it is readily understood that the outer surface of the nickel coating 16 will have reproduced therein the graining or stippling provided upon the surface 13 of the plate 11. The construction of the completed intaglio plate is illustrated in Figs. 1 and 2 and described above.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. An intaglio plate for printing by off-set lithography, said plate including a grained sheet having printing surfaces thereon and a raised coating on said sheet between said printing surfaces and higher than the same, said coating having a surface capable of retaining dampness and repelling ink whereby the raised coating prevents the spreading of ink and confines the intended printing particles to their predetermined dimensions.

2. An intaglio plate for printing by off-set lithography, said plate comprising a grained sheet provided with printing surfaces and a raised coating on said sheet between the printing surfaces and projecting thereabove, said coating having a hydrophilic surface having the capability of retaining dampness and the said coating preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

3. An intaglio plate for printing by off-set lithography, said plate comprising a grained sheet having printing surfaces thereon and a raised coating on said sheet extending above the printing surfaces, said coating having a grained surface to thereby render it capable of retaining water dampness, and the said coating preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

4. An intaglio plate for printing by off-set lithography, said plate comprising a grained sheet having printing surfaces thereon and a coating on said sheet between the printing surfaces and extending above the same, said coating having the characteristics of repelling ink and of retaining dampness and preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

5. An intaglio plate for printing by off-set lithography, said plate comprising a grained sheet having printing surfaces provided thereby, and a coating on said sheet between the printing surfaces and of greater depth thereof, said coating comprising metal having the characteristics of repelling ink and being stippled to retain dampness and preventing the spreading of ink and confining the printing particles to their predetermined dimensions.

6. An intaglio plate for printing by off-set lithography, said plate comprising a grained flexible sheet having printing surfaces associated therewith and a coating on said sheet

between the printing surfaces and of greater height than the same, said coating having a hydrophile surface to retain dampness, and the said coating preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

7. An intaglio plate for printing by off-set lithography, said plate comprising a grained zinc sheet having printing surfaces thereon, a nickel coating on said sheet between the printing surfaces and of a greater height than the printing surfaces, said nickel coating being grained to render it hydrophile to thereby retain dampness and repel ink, the raised nickel coating preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

8. An intaglio plate for printing by off-set lithography, said plate comprising a flexible sheet having a substantially continuously grained upper surface and provided with a printing area thereon, a coating on said sheet between the printing surfaces of a greater depth than the printing surface, said coating having a grained surface corresponding substantially to the grained surface of the flexible sheet whereby to render it hydrophilic to retain dampness, the raised coating preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

9. An intaglio plate for printing by off-set lithography, said plate comprising a zinc sheet having a substantially continuously grained surface and being provided with a photographic printing area and a coating on said zinc sheet comprising nickel positioned between the printing area and extending thereabove, said nickel coating being grained at its upper surface to render it hydrophilic to retain dampness and said coating preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

10. An intaglio plate for printing by off-set lithography, said plate having a grained sheet provided with printing surfaces and a coating on said sheet between the printing surfaces and of greater depth than the printing surfaces, said coating having a grained surface whereby to render it capable of retaining water dampness, the coating preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

11. An intaglio plate for printing by off-set lithography, said plate comprising a grained sheet having printing surfaces associated therewith and means on said sheet between said surfaces and of a greater height than said surfaces, said means comprising hydrophile metal capable of retaining water dampness and of repelling ink whereby the image of ink placed upon the printing sur-

face will form an affinity for ink and the said means extending above the printing surfaces preventing the spreading of ink and confining the intended printing particles to their predetermined dimensions.

12. An intaglio plate for printing by off-set lithography, said plate comprising a grained sheet with printing surfaces thereon and a coating on said sheet between said surfaces and of greater depth than the surfaces, ink particles adhering to said sheet and providing printing surfaces thereon, said coating having a surface capable of retaining water dampness and of repelling ink whereby the image of ink placed upon the printing surface will form an affinity for ink and the coating extending above the printing surfaces will repel ink.

13. An intaglio plate for printing by off-set lithography, said plate comprising a grained sheet having printing surfaces associated therewith with ink particles adhering thereto and a coating on said sheet positioned between said printing surfaces and ink particles thereon and of a greater height than the same, said coating having a rough, irregular surface to retain water dampness and repel ink, the coating preventing the spreading of the ink particles and thereby confining the intended printing particles to their predetermined dimensions.

14. The herein described method of making intaglio plates for printing by off-set lithography, the steps which comprise producing a plate having printing surfaces in relief, applying a coating of greater height than the printing surfaces to said plate to render it intaglio, said coating having an irregular surface to retain water dampness and preventing spreading of ink and confining the intended printing area to its substantially predetermined dimensions.

15. The method of making an intaglio plate for printing by off-set lithography which comprises, the steps of producing a plate having printing surfaces in relief, in applying a coating to said plate, said coating having a grained surface to render it capable of retaining moisture, maintaining the depth of the coating to an extent greater than that of the printing surfaces whereby the coating prevents the spreading of ink on the printing surfaces and confines the intended printing area to its predetermined dimensions.

16. The method of producing an intaglio plate for printing by off-set lithography comprising the steps of producing a plate having printing surfaces in relief and applying an ink repellant coating to said plate of a depth greater than the printing surfaces to render it intaglio.

17. The method of producing an intaglio plate for printing by off-set lithography, which method comprises producing a plate

- having printing surfaces in relief and applying a coating to said plate of a height greater than the printing surfaces to render it intaglio, said coating having its outer surface
 5 grained to retain moisture, applying moisture to the said coating to be retained thereby and in subsequently applying ink to the plate, said ink being retained by the printing surfaces and repelled by said coating.
- 10 18. The process of producing an intaglio plate for printing by off-set lithography, the steps which consist in graining a flexible metal sheet, forming printing surfaces on said metallic sheet, applying a coating to said
 15 grained metallic sheet between the printing surfaces thereof, said coating being of a greater height than the printing surfaces to thereby render it intaglio, and having a grained surface substantially conforming to that of the sheet to retain dampness and
 20 repel ink.
19. The process of producing an intaglio plate for printing by off-set lithography, the steps which consist in graining a flexible
 25 metallic sheet, producing photographic printing surfaces on said sheet, applying a coating to said grained metallic sheet between the printing surfaces thereof, said coating being of a greater height than the
 30 printing surfaces to thereby render it intaglio, and having a grained surface substantially conforming to that of the sheet to retain dampness and repel ink.
20. A method of producing an intaglio
 35 plate for printing photolithographs, which method comprises coating a grained sheet of metal with a substance which hardens when exposed to light, exposing said coating to light through a photographic negative, removing unhardened portions of said substance from said sheet and coating the unexposed
 40 portions of said sheet to a height greater than the exposed portion to render it intaglio.
- 45 21. The method of producing an intaglio plate for photolithographs, which method comprises coating a flexible sheet of metal with a substance which hardens when exposed to light, exposing said coating to light
 50 through a photographic negative to thereby produce a printing surface, removing unhardened portions of said substance from said sheet, applying a coating to the unexposed portions of said sheet, of a depth higher
 55 than the printing surface, to render it intaglio, said coating having its surfaces in grained formation to thereby render them hydrophilic to retain dampness.
22. The method of producing an intaglio
 60 plate for photolithographs, which method comprises coating a flexible sheet of metal with a substance which hardens when exposed to light, exposing said coating to light through a photographic negative to thereby
 65 produce a printing surface, removing unhardened portions of said substance from said sheet, applying a coating to the unexposed portions of said sheet, of a depth higher than the printing surface, to render it intaglio, said coating having its surfaces in grained formation to thereby render them
 70 hydrophilic to retain dampness, and in subsequently applying ink to said plate which adheres to the printing surfaces and is repelled by the said raised coating.
23. An intaglio plate for printing by off-set lithography, said plate including a
 75 grained sheet having photographic printing areas thereon and a raised coating on said sheet between said photographic printing areas and higher than the same, said coating
 80 having its surface grained similarly to that of the sheet to thereby retain dampness and repel ink.
- In testimony whereof, I have hereunto
 85 signed my name.
- OSCAR KOHN.
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