

M. A. DROITCOUR.
 PROCESS OF MAKING TONED PRINTING PLATES.
 APPLICATION FILED APR. 16, 1910.

1,051,203.

Patented Jan. 21, 1913.

Fig. 1.

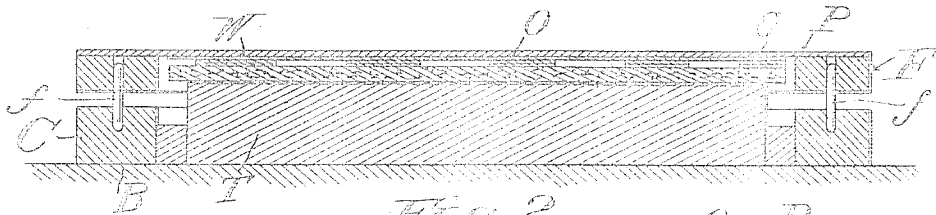


Fig. 2.

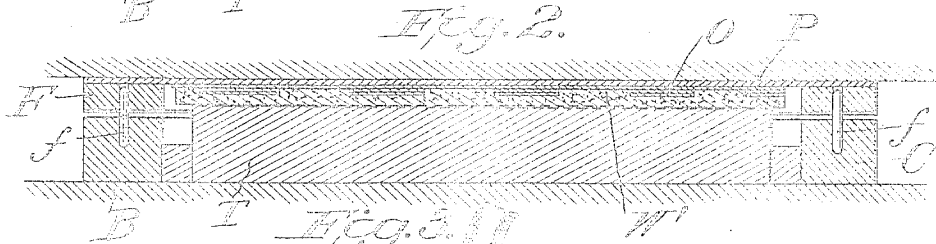


Fig. 3.

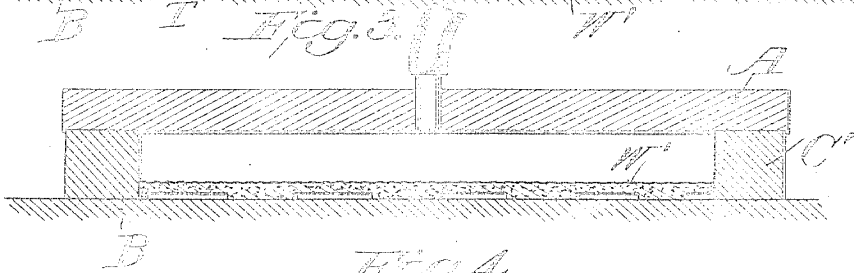


Fig. 4.



Fig. 5.



Fig. 6.

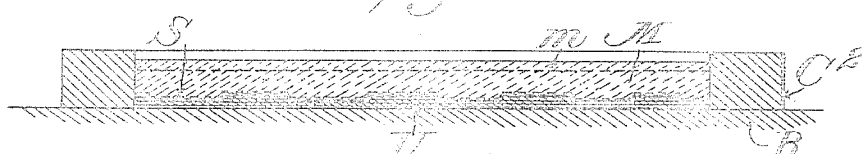
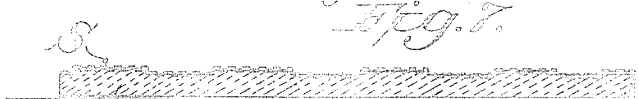


Fig. 7.



Inventor

Witnesses
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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING TONED PRINTING-PLATES.

1,051,202.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed April 16, 1910. Serial No. 555,231.

To all whom it may concern:

Be it known that I, MICHAEL A. DROITCOUR, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes of Making Toned Printing-Plates; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is a novel process or method of making toned printing plates, or so-called "made-ready" printing plates, in which the desired variations in depth of color, or light and shade, in the impressions printed from such plate are obtained by varying the height of the printing surface of the plate, so that the pressure exerted upon the plate in taking an impression therefrom will vary on different parts of its surface, the impressions being darker or more heavily inked where the surface of the plate is high, and the pressure therefore greater; and being lighter where the surface of the plate is depressed and the pressure therefore reduced. The actual variations in the height of the surface of the plate are very minute, and would probably not be distinguishable by the eye, but the nature and utility of such plates are well known in the trade, and various processes have been devised for manufacturing same.

It is the object of the present invention to enable the tones in the plate to be determined with nicety prior to the formation of the plate by toning the matrix or mold from which the plate is made, so that the plate produced from such matrix will be properly toned without any mechanical manipulation whatsoever of the surface of the plate.

The nature of the invention and a practical mode of carrying the same into effect will be fully explained hereinafter with reference to the accompanying drawings which diagrammatically illustrate various parts and steps of my novel process of producing a toned plate; and will enable those familiar with the art to practically utilize the invention.

In said drawings—Figure 1 diagrammatically represents a sectional elevation of a chase, printing surface, frisket, wax, paper and overlay, in position preparatory to making and toning the matrix. Fig. 2 is

a similar view thereof showing the formation of the matrix. Fig. 3 is a view conventionally illustrating the step of reversing the matrix or wax sheet. Fig. 4 is a diagrammatical sectional view of the complete matrix. Fig. 5 illustrates the toned shell formed from such matrix. Fig. 6 illustrates the method of backing such shell. Fig. 7 conventionally illustrates a complete plate.

In using my invention, the original printing block or type form (indicated at T in the drawings, Fig. 1), is locked in a chase C in the usual manner. A frisket F corresponding in size to the chase is adapted to be placed thereover, and may be registered in position on the chase by means of pins *f*, or other suitable devices. A sheet of paper or fabric P is pasted to the frisket and an impression is then taken on the sheet from the form T; then the frisket can be removed and an overlay O is preferably pasted to the sheet P, in register with the impression thereon. This overlay O may be of any desired kind such as are commonly used in the art, and is indicated as if made of layers of paper which can be built up from sheets of paper previously printed on the form and pasted together and to the impression on sheet P so as to have thicknesses of material at those portions of the impressions which it is desired shall appear dark in the impressions to be taken from the ultimate printing plate; I do not however limit myself to any particular construction of this overlay; and the size and thickness of the projections of the overlay O will vary in accordance with the "tones" desired in the ultimate impressions. After the sheet has been impressed and the overlay applied thereto as described, a sheet of wax W is placed on the type. By wax I mean any suitable plastic material which can be used to receive intaglio impressions from the type and to form a mold from which a printing surface can be subsequently formed. The frisket with its attached sheet of paper and overlay is then placed upon the chase and over the form and wax sheet, as indicated in Fig. 1. The form, wax, paper and overlay are then subjected to pressure in a suitable press so that the printing surface of the type is embedded into the lower side of the wax to form a

matrix, and the overlay O is embedded into the upper side of the wax, as indicated in Fig. 2. The frisket and wax are then removed from the form, and the overlay removed from the back of the wax. The wax sheet or matrix W' now having an even impression surface, and uneven back surface, is then placed in a suitable chamber, as by placing it face uppermost upon a supporting bed B within a chase C', as indicated in Fig. 3; and then the chamber containing this matrix W' is sealed, as by a top plate A, and into the closed chamber above the matrix W', Fig. 3, compressed air or other suitable fluid is admitted, with the result that the matrix is reversed, that is the type surface of the matrix is pressed back where there were originally recesses in the back of the matrix, until the indentations that originally appeared in the back of the plate (formed by the overlay O) appear in the face of the matrix, as indicated in Fig. 4. The matrix is then removed and its toned face coated with metal,—in any well known way as by electrotyping,—until a shell S is formed thereon, as indicated in Fig. 5. This shell S is then removed from the matrix and placed face downward in a suitable receiver, such as a chase C² resting on the bed B, (Fig. 6) and a suitable amount of molten metal is poured into the chase C² above the shell S to back the same and form a printing plate of desired thickness. Preferably the face of the shell is supported during the backing process by a suitably formed underlay U so as to prevent the face of the shell being distorted in any way during the backing operation, substantially as described in my Patent No. 952,312 of March 15, 1910. The plate comprising the shell S and backing M is then reduced to the desired thickness with a uniform plane surfaced back, by dressing or planing the back (as along the line m, Fig. 6)—in any well known way; and after the edges of the plate are trimmed it is ready for use.

By properly building up or forming the overlay O, and ultimately reversing the wax matrix in the manner described, the intaglio type or printing face of the matrix (Fig. 4) will be unequal, there being depressions at certain points and relative projections at other points. While these projections and depressions are actually very minute they are, nevertheless, sufficient when correspondingly reproduced in a printing plate to cause such variations in the pressure of the paper thereagainst during the taking of impressions that the desired lights and shades will appear in the impressions taken from such plate.

It will be observed that when the shell S is formed as described its printing surface, which immediately contacts with that of the wax matrix, will correspond exactly but re-

versely to the toned surface of the matrix,—so that such printing surface—(if it is not distorted by careless handling in backing it and in finishing the plate)—will produce exactly the desired lights and shades in the impression.

It will be noted that in this invention the toning of the plate is effected by toning the matrix, and that the metal of the plate itself is not treated nor stressed nor strained nor distorted in any way in order to tone the plate.

I preferably use the underlay U when backing up the shell and planing the plate in order to prevent any distortion of the shell by the heat of the metal or pressure, and not for the purpose of toning up the plate at all; but simply to support the shell and prevent its sagging under the heat and weight of the hot metal poured thereon, Fig. 6, or under the pressure of the finishing tool, substantially as described in my aforesaid patent. This underlay U only serves to hold or support the shell while it is being backed and finished and not for the purpose of forming the tones.

If the matrix W', Fig. 4, be made of suitable material the plate might be directly cast therefrom, and the invention would be useful for producing toned plates cast direct from a matrix formed and toned in the manner described.

Having described my invention what I claim is:

1. The herein described process of making toned printing plates, consisting in first preparing a toning member, then placing matrix-material over the printing surface; then placing the toning member upon the matrix material and subjecting them to pressure, thereby producing an intaglio type surface in the face of the matrix, and depressions in the back of the matrix corresponding to the projections of the toning member; then reversing the matrix by subjecting it to fluid pressure whereby the recesses formed by the toning member in the back of the matrix are caused to appear in the face thereof, and finally forming a printing plate from said matrix;—said printing plate having its printing surface toned reversely to the previously toned face of the matrix.

2. The herein described process of making toned printing plates, consisting in placing a wax sheet over a form; placing an overlay against the back of the wax sheet; subjecting the sheet, overlay and form to pressure, thereby producing an intaglio type surface on the face of the sheet and depressions in the back of the sheet corresponding to the projections of the overlay; then subjecting the matrix to fluid pressure to cause the recesses formed by the overlay in the back of the matrix to appear in the face thereof; and finally forming a printing plate from

said matrix, said printing plate having its face toned reversely to the previously toned face of the matrix.

3. The herein described process of making
5 toned printing plates, consisting in placing a sheet of plastic material over a printing form; placing a toning member against the back of the said sheet; subjecting the sheet, member and form to pressure, thereby pro-
10 ducing an intaglio surface in the face of the sheet from the form, and depressions in the back thereof from the projections of the toning member; then reversing the matrix so that the recesses formed by the toning
15 member are caused to appear in the face of the matrix; then depositing a metal shell on the toned surface of said matrix; and finally removing said shell and backing the same; the resultant printing plate having
20 its face toned reversely to the toned face of the matrix.

4. The herein described process of making
25 toned printing plates, consisting in preparing an overlay; placing a wax sheet over the form; placing the overlay against the back of the wax sheet; subjecting the sheet, overlay and form to pressure thereby pro-
30 ducing a matrix having an intaglio surface in its face corresponding to the form and depressions in its back corresponding to the overlay; then causing the depressions in the back of the matrix to appear in the face
35 thereof; then depositing a metal shell on the face of said matrix; and finally removing said shell and backing same, the finished printing plate having its face toned reversely to the previously toned face of the matrix.

5. The herein described process of making
40 toned printing plates, consisting in first preparing a toning member; placing a plastic sheet over a form; placing the toning member upon the back of the sheet, and subjecting the sheet, member and form to pressure
45 thereby producing a matrix having an intaglio surface on its face, and depressions in its back; then subjecting the matrix to fluid pressure whereby the depressions originally
50 in the back of the matrix are caused to appear in the face thereof; then depositing a metal shell on the surface of said matrix; then removing the matrix and supporting the surface of the shell on a suitable under-
55 lay to prevent distortion of the toned surface of the shell, and backing the shell while so supported to form a plate, said plate having its face toned reversely to the previously toned face of the matrix.

6. The herein described process of mak-
60 ing toned printing plates, consisting in first producing a matrix, then toning the back of the matrix, then toning the face of the matrix by making the projections and depressions on its back appear on its face,
65 then depositing a metal shell on the toned

face of the matrix, then supporting the toned surface of the shell on an underlay, and finally backing the toned shell while so supported.

7. The herein described process of mak-
70 ing toned printing plates, consisting in placing plastic material upon the form, placing a toning member upon the plastic material; subjecting them to pressure, thereby forming the material into a matrix
75 having an intaglio type surface in its face, and depressions in its back; then toning the face of the matrix by causing the depressions in the back of the matrix to appear in the face thereof, and finally form-
80 ing a printing plate from said toned matrix; said printing plate having its printing surface toned reversely to the toned face of the matrix.

8. The herein described process of mak-
85 ing toned printing plates, consisting in placing plastic material upon a form; placing a toning member over the plastic material; subjecting them to pressure, thereby converting the material into a ma-
90 trix having an intaglio type surface in its face corresponding to the face of the form, and depressions in its back corresponding to the projections of the toning member; then toning the face of the matrix by caus-
95 ing the depressions in the back of the matrix to appear in the face thereof, and finally forming a printing plate from said matrix; said printing plate having its
100 printing surface toned reversely to the toned face of the matrix.

9. The herein described method of mak-
ing toned printing plates, consisting in forming a matrix in plastic material from
105 a printing surface, reversely toning the back of the matrix, then reversing the matrix by pressure to make the tones appear on its face, then forming a metal shell on the toned surface of such matrix and sub-
110 sequently backing such toned shell.

10. The herein described process of mak-
ing toned printing plates, consisting in first producing a matrix with toning inequalities
115 in its back, then reversing the matrix by fluid pressure to tone its face, then electro-depositing a metal shell on the toned face of the matrix, and finally backing the toned shell.

11. The herein described method of mak-
ing toned printing plates, consisting in mak-
120 ing a suitable plastic matrix, pressing the back of the matrix against a suitable toning surface, subjecting the matrix to fluid pressure to cause the tones to appear in its face, then electro-depositing metal on the toned
125 face of the matrix to form a shell, and subsequently backing such toned shell to form a toned printing plate.

12. The herein described process of mak-
ing toned printing plates, consisting in first
130

producing a matrix toned on its back, then
subjecting the face of the matrix to fluid
pressure to cause the tones to appear on its
face, then depositing a metal shell on the
5 toned face of the matrix, supporting the
shell on a reverse underlay, and finally back-
ing the toned shell while so supported.

13. The herein described process of mak-
ing toned printing plates, consisting in first
10 producing a matrix, then toning the back
of the matrix, then toning the face of the
matrix by subjecting it to fluid pressure to
cause the tones on its back to appear on its
face, then depositing a metal shell on the
15 toned face of the matrix, said shell having
its printing surface toned reversely to the
matrix, and finally backing the toned shell.

14. The herein described process of mak-
ing toned printing plates, consisting in first
20 producing a matrix, then toning the face of
the matrix, and then electro-depositing a
shell on the face of the matrix and subse-
quently backing such toned shell.

15. The herein described method of mak-
ing toned printing plates, consisting in
25 forming a matrix in plastic material from a
printing surface, toning the face of the plas-
tic matrix by pressing the same against a

suitable toning member, then electro-de-
positing a metal shell on the toned surface 30
of such matrix and subsequently backing
such toned shell.

16. The herein described process of mak-
ing toned printing plates, consisting in first
producing a matrix, then toning the matrix, 35
then electro-depositing a metal shell on the
toned face of the matrix, supporting the
toned shell on an underlay, and finally back-
ing the toned shell.

17. The herein described process of mak- 40
ing toned printing plates, consisting in first
producing a matrix, then toning the back
of the matrix, then subjecting the matrix
to fluid pressure to make the projections
and depressions on its back appear on its 45
face; then depositing a metal shell on the
toned face of the matrix, removing the
toned shell, supporting its face on an under-
lay, and finally backing the toned shell.

In testimony that I claim the foregoing as 50
my own, I affix my signature in presence of
two witnesses.

MICHAEL A. DROITCOUR.

Witnesses:

ELMER HASSMANN,
SYLVIA WILLS