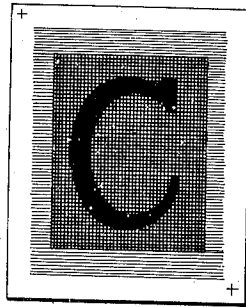


S. WEINWURM.
METHOD OF MAKING READY PRINTING PLATES.
APPLICATION FILED AUG. 7, 1901.

996,959.

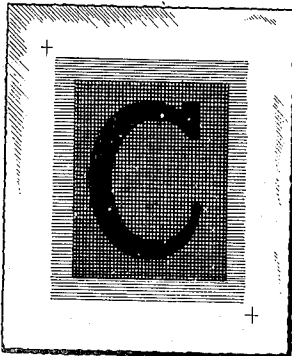
Patented July 4, 1911.

Fig. 1.



Original

Fig. 2.



*Reverse
Negative.*

Negative

Fig. 3.

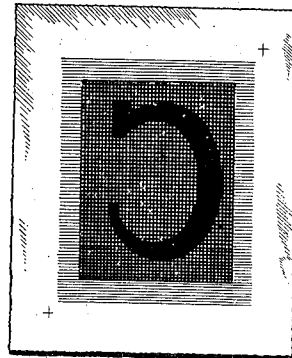
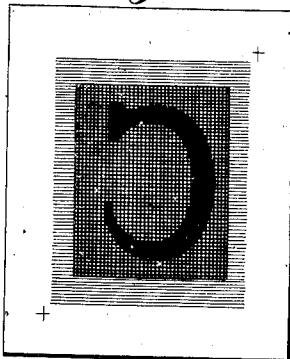


Fig. 4.



*Plate with
impression
printed from
reverse nega-
tive upon its
face.*

*Plate with
impression
printed from
negative on
its back.*

Fig. 5.

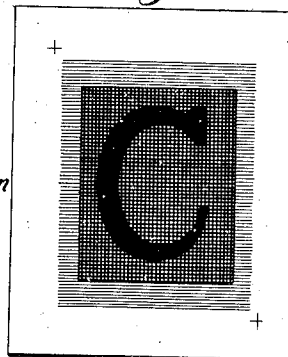
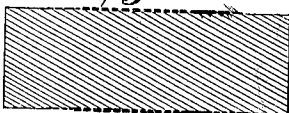


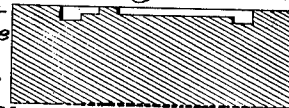
Fig. 6.



*Section of Plate
with indications
of image on
face and back.*

*Section of Plate
with indica-
tions of image
on face, and
same image
etched to different depths on back.*

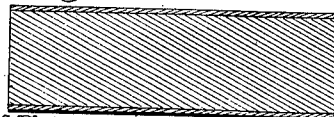
Fig. 7.



WITNESSES

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E. T. Hattis

Fig. 8.



*Section of Plate with stripped reverse negative
film on face and stripped negative film on back.*

INVENTOR

by Stephen H. Hockaday
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UNITED STATES PATENT OFFICE.

STEPHAN WEINWURM, OF STUTTGART, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO C. B. COTTRELL & SONS COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

METHOD OF MAKING READY PRINTING-PLATES.

996,959.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed August 7, 1901. Serial No. 71,263.

To all whom it may concern:

Be it known that I, STEPHAN WEINWURM, a citizen of the Kingdom of Hungary, residing at Stuttgart, in the Kingdom of Württemberg, Germany, have invented certain new and useful Improvements in Methods of Making Ready Printing-Plates, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

This invention has for its object a chemi-cographic method of preparing printing plates, whereby when printing with the plates the usual packing or "make-ready" is rendered unnecessary.

The process may be carried out in two ways:

The first method is as follows: A negative of the object or picture which is to be used for the printing side of the plate is taken by means of a prism or reversing mirror, and another negative is taken of the same size but without the reversing device, in such a way that the two negatives are opposed right and left. So-called register marks or the like are made on the edge of the original object or picture before the negatives are made. Each impression or image is now transferred to the same metal plate by any suitable copying process, one impression (the reverse picture) being applied to the face and the other to the back of the plate so that the pictures register, this result being obtained by laying the register marks over one another the marks having been placed on the edge of the plate after the first transfer. In order to obtain an exact register the negatives must, as before stated, be opposed right and left. Then that transfer or image which corresponds in printing to the direction of the original is etched or, if the picture when printed is to appear reversed, the other transfer or image is etched; the other or second transfer is then etched on the back of the plate but is made more effective in gradations of light and shade which will in each case be suited to the character of the original picture. In autotypes for instance the lights of the image on the back of the plate may be etched out entirely while the shadows are left unaffected. The intermediate tones are graded according to the capability of the graining to resist more or

less strongly the etching fluid. Greater contrast in the lights and shades may be obtained in the preparation of the second negative by a suitable shuttering during the exposure and a suitable strengthening and weakening of the negative so that a subsequent touching up by hand is unnecessary.

The second method of carrying out the process is as follows: The same negative is transferred on to both sides of the metal plate but the negative to be transferred or used in transferring to the back of the plate must be stripped and transferred directly while that for the front of the metal plate must be stripped from the glass plate and turned over and remounted or applied reversely in order that a registering of both copies on the metal plate be obtained. The etching then takes place in the manner previously described only on the etching in the rear side the strong places must be covered in order that they may not be attacked by the etching fluid.

In both processes the metal plate is thinner at the places where the lights are etched out than at those places where the shadows remain, that is to say, at those places which were etched slightly or not at all. The thicker places of the plate then print more strongly and the thinner more lightly and the desired effect is obtained without the finished block requiring any packing. It will thus be observed that I employ familiar steps of an art as the initial steps of my new process and that the manner in which my process is applied produces a printing plate having hollows or depressions in its back which correspond to the high-lights and intermediate tones of the picture or delineation on the face of the plate, or in brief, a plate in which "make-ready" has been put into the back of the plate.

It is, for example, well-known in the art, especially in that branch of the art having to do with half-tone plates, that either a prism or a reversing mirror may be used to produce a reverse negative, and that such a negative is commonly employed in printing or transferring the image upon or to the face of a prepared metal plate. It is also well-known that instead of using a prism or reversing mirror a reverse negative may be obtained by stripping the film from the glass plate of the negative, turning it over and

then mounting it as thus reversed upon the same or another glass plate; and that in case, for example, no printing frame large enough for a particular subject or group of subjects
 5 be at hand, the negative film may be stripped from the glass plate and applied directly to the prepared metal plate. The novelty of my invention lies in the way in which the transferring or copying and the etching
 10 processes are used by me in carrying out my process to produce a new result.

While any copying or transferring process may be used to get the opposing images on opposite sides of a plate, I have shown that
 15 my process is especially adaptable in employing the familiar photographic methods in which a print is made upon a previously prepared metal plate by the action of light through a negative and, as is briefly said in the art, this print is then etched. In my
 20 process I, preferably, do the same thing to the back of the plate that has been previously done to the front of the plate. Obviously, if desired, one method may be employed
 25 in getting the image on the face of the plate and another method may be employed in getting the image on the back of the plate, but it will, of course, be generally expedient to use the same method in each
 30 case, varying only to get the ordinary negative for one face and a reverse negative for the other face, so that the images may be properly opposed and registered. Then, as described, when the image is transferred
 35 by any suitable process to the back of the plate I etch the back of the plate and etch portions of the back of the plate to successively greater depths until the hollows or depressions conform to the light and intermediate tones in the face of the plate, the
 40 depth of each depression bearing a due relation to the grade of the corresponding tone of the subject on the face of the plate.

I have not detailed the etching steps because the methods of etching successively or in different degrees on different parts of a plate are well understood in the art, as in "fine etching" or "staging". I, however,
 45 carry forward the etching with a new purpose and produce a plate varying in thickness in accordance with the tones of the subject.
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A simple illustration of the preferred manner in which my methods are practiced is presented in the accompanying drawing in which,—
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Figure 1 is a plan of an "original" of which a photograph is to be taken and which is to be reproduced by a printing plate. Fig. 2 is a plan view of a reverse negative of the original. Fig. 3 is a plan view of a negative of the original. Fig. 4 is a plan view showing an impression made by printing from a reverse negative in the
 60 usual manner upon the face of a metal
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printing plate. A copy or reproduction printed by the plate would have an image or impression having the same direction as the original of Fig. 1. Fig. 5 is a plan view of an impression similarly printed or photo-
 70 graphed upon the back of the plate by the customary method. Fig. 6 is a section of the printing plate with the impressions on the front and back, the illustration of the impression being arbitrary and designed thus
 75 to better indicate the different tones. Fig. 7 is a view showing the effect of etching the back of the plate to successively greater depths in accordance with the tones of the impression previously printed upon the back
 80 of the plate, the illustration being somewhat modified to bring out the relative degrees of the tones. Fig. 8 represents a plate with a stripped negative film on the back of the plate and a stripped reverse negative film
 85 on the face of the plate, in accordance with the second described method of first producing the plate of Fig. 6 and then the plate of Fig. 7.

It will be observed that in this illustration a simple device has been used to illustrate three tones in the original. The letter C represents the shadow, the double shaded part in which the letter lies the intermediate or "half-tone", and the single shaded part
 90 the high-light. At two corners are register marks placed on the original so that they may be reproduced on the negatives. It will be understood that the various proportions are either diminished or exaggerated as expedient with reference to a clearer illustration of the steps of the method.
 95

In Figs. 2 and 3 a reverse negative and a negative are respectively shown imposed upon glass plates. In Figs. 4 and 5 these negatives have been respectively applied to the face and the back of the plate as indicated, the pictures there showing oppositely. Both the face and the back of the plate at this time are level and differ in no respect from the ordinary half-tone plate, except that there is on the back of the plate an impression of a picture reversely arranged with reference to that on the face of the plate. On the back and face of Fig. 6 and on the face on Fig. 7, the light dots indicate the high-light, the heavier dots the intermediate or half-tone and the short solid line the "shadow" or "dark". When, however, the next step of successive etching is performed the new result appears as evidenced on the back of Fig. 7 where the plate, as before described, is of different thickness in different parts, or in other words, has a graduated back, thinnest at the high-light, thickest at the dark or shadow, and intermediate at the intermediate tone.
 100
 105
 110
 115
 120
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Fig. 8 illustrates the familiar application of a reversed negative film to the face of the plate for the purpose of printing an impres-
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sion through the negative and also illustrates the application of a stripped negative film taken directly from the glass and applied without reversing to the back of the plate so that a picture may be printed through this negative identical with the picture on the face of the plate but oppositely arranged.

It will be understood that if looking through a plate with the negatives applied or the impression produced on the face and back the lines and directions of the picture would agree or register. To secure this result, as described, the negatives and impressions must be oppositely arranged because one is on the face and the other on the back of the plate.

Having described my invention, what I claim is,—

1. The improved method of making ready printing plates which consists in etching upon the back of a plate a picture or delineation similar to that which has been transferred to the face of the plate, the two pictures or delineations being in register.

2. That improvement in the art of preparing printing plates which consists in photographing a picture or delineation upon the face of a plate and also photographing upon the back of the plate a similar picture reversely arranged with reference to the picture on the face of the plate.

3. That improvement in the art of treating printing plates which consists in photographing a picture or delineation upon the face of a plate, and also photographing a similar reversely arranged picture or delineation upon the back of the plate, and in then etching both sides of the plate.

4. That improvement in the art of treating printing plates which consists in photographing a picture or delineation upon the face of a plate, and also photographing a similar reversely arranged picture or delineation upon the back of the plate and in then etching both sides of the plate, and in then further etching the back of the plate to form graduations in its back.

5. That improvement in the art of making ready printing plates which consists in etching upon the back of the plate in a graduated manner a reversely arranged image of the picture to be printed.

6. That improvement in the art of making ready printing plates which consists in producing on the back of a plate a reversely

arranged fac-simile of the picture or delineation upon the face of the plate and in then etching the back of the plate to successively greater depths from the dark to the high lights.

7. That improvement in the art of making ready original printing plates which consists in producing a negative from the subject to be illustrated and transferring it to the back of a plate, and then producing a reverse negative and transferring it to the face of the plate and in register with the picture or delineation at the back of the plate.

8. That improvement in the art of making ready original printing plates which consists in producing a negative from the subject to be illustrated and transferring the subject by it to the back of the plate, then producing a reverse negative and transferring the subject by it to the face of the plate and in register with the picture or delineation at the back of the plate, and in subsequently producing graduations in the back of the plate by etching to varying depths.

9. The process of preparing printing plates, which consists in transferring an image to both the face and the back of a plate and etching the image upon the face to produce a printing surface and upon the back to produce graduations of level in the various tones of the subject.

10. The process of preparing printing plates which consists in making a direct negative and a reverse negative of a subject, printing from one negative on the face of a metal plate and from the other on the back of the plate, etching the print on the face of the plate to produce a printing surface and etching the tones of the print on the back of the plate to different depths.

11. A plate provided on each side with an image of the subject to be illustrated, the images being oppositely arranged and in register, and the image on the back of the plate being etched away at the lighter portions of the picture.

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

STEPHAN WEINWURM.

Witnesses:

WALTER SCHWAEBSCHE,
JULIUS HEIM.