

May 30, 1933.

K. WOLFSOHN

1,911,254

PROCESS FOR THE PRODUCTION OF ENDLESS INTAGLIO PRINTING FORMS

Filed Aug. 25, 1930

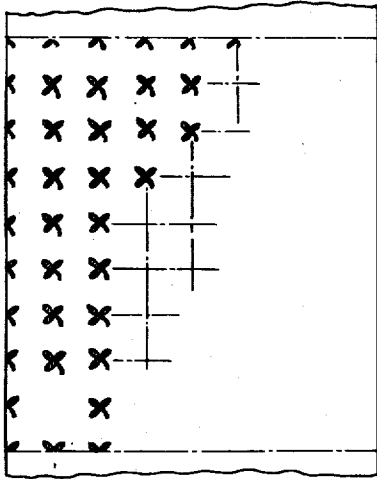


Fig. 1

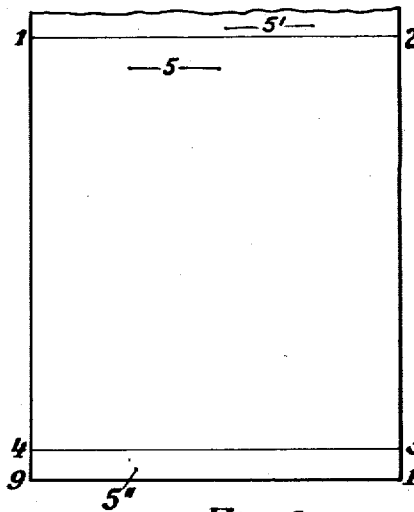


Fig. 2

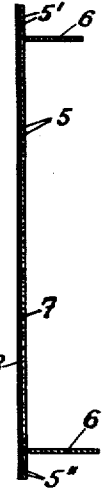


Fig. 3

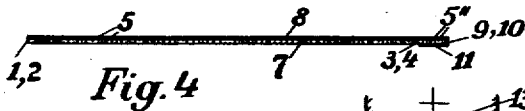


Fig. 4

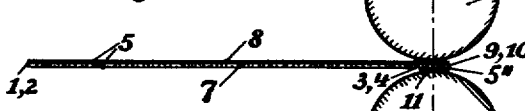


Fig. 5

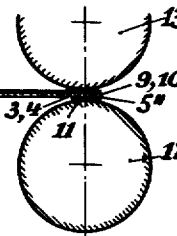


Fig. 6

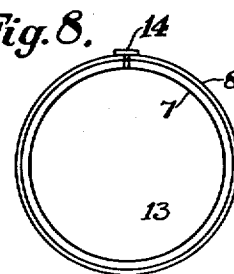
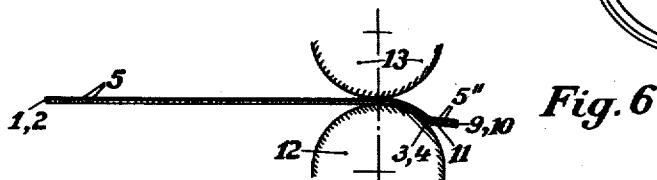


Fig. 6

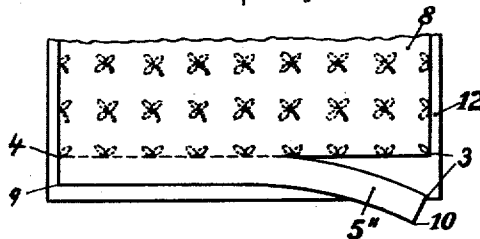


Fig. 7

Inventor:

Kurt Wolfsohn

By *Joseph Hirschma*
Atty.

UNITED STATES PATENT OFFICE

KURT WOLFSOHN, OF SCHOENEBERG NEAR BERLIN, GERMANY, ASSIGNOR TO ROTOPHOT A.-G. FÜR GRAPHISCHE INDUSTRIE, OF BERLIN, GERMANY, A CORPORATION OF GERMANY

PROCESS FOR THE PRODUCTION OF ENDLESS INTAGLIO PRINTING FORMS

Application filed August 25, 1930, Serial No. 477,603, and in Germany August 27, 1929.

In my copending application Ser. No. 477,604, filed simultaneously herewith, is described a process for the production of endlessly etched intaglio printing forms by transferring the resist covering on to a printing cylinder in a single operation, such requiring the utilization of carbon coatings which are easily detachable from their backings.

In contradistinction thereto the present invention while it embodies certain features described in said copending application, eliminates the necessity for employing easily detachable carbon coatings. The present invention offers thus the advantage that the ordinary kind of carbon papers may be used in the performance of the process described in said application.

My improved process may be performed in the following manner:

The edges of a carbon sheet, i. e. a sensitized gelatine or other film on a suitable backing, larger in size than the circumference of the copper cylinder, are marked in the middle to correspond to the length and width of the intaglio printing cylinder for the purpose of serving as register marks for the similarly marked design. The design is now placed on the carbon sheet in such manner that all register marks tally, and then the copy is made. Thereafter, the exact circumference and width of the printing cylinder are ruled out on the carbon sheet measured from the register marks, and then, one of the resulting margins is cut off, and an incision is made along the corresponding parallel marginal line, some sharp instrument being used for the purpose; only the coating is cut through, but not its backing. This so treated margin serves as a gripping edge and is made non-adhesive, which may be accomplished by pasting a strip of paper over the coating or by applying a coat of varnish; previous to this, the other margins have been nicked. The gripping edge which has been

made in aforesaid manner is utilized in the usual way to provide a start for the transfer operation.

The invention will be further described in connection with the accompanying drawing which illustrates by way of example a preferred manner of carrying out the same. In said drawing,

Fig. 1 is a plan view of a transparent sheet having thereon the pattern which is to be etched on the printing cylinder;

Fig. 2 is a similar view of the sheet of sensitized film, commonly called carbon tissue or carbon sheet;

Fig. 3 is a section through the carbon sheet, and indicates the complete severing of one superfluous marginal portion and the partial severing of the other after the sheet has been exposed;

Fig. 4 is a view similar to Fig. 3 and shows the non-adhesive coating on the gripping edge portion whereby the latter is prevented from sticking to the printing cylinder;

Fig. 5 shows the carbon sheet as it is being introduced into the transfer device;

Fig. 6 shows the sheet partly mounted upon the copper printing cylinder;

Fig. 7 is a plan view of Fig. 6 illustrating the removal of the gripping edge from the carbon sheet, and

Fig. 8 is an end view of a cylinder having the carbon sheet applied thereon, and a varnish coating protecting the seam against the entry of water.

The carbon or equivalent sheet, shown in Fig. 2, is longer than the circumference of the copper or other cylinder upon which the endless intaglio pattern is to be produced, and is provided with markings which indicate the center lines along both the width and circumference of the intaglio printing cylinder. The so marked sheet, in which the surface 1, 2, 3, 4 corresponds exactly to the surface of the endless printing form or cylinder, is then accurately placed upon the

pattern sheet shown in Fig. 1 which is provided with similar markings. The copy is then made upon the carbon sheet 5 by exposing the sheets on known manner. Measuring now from the center markings, the exact surface 1, 2, 3, 4 of the printing form is now indicated on the carbon sheet 5, the distance between the lines 1, 4 and 2, 3 corresponding exactly to the circumference of the copper cylinder. The superfluous portion 5' is now cut off by means of a knife 6, as indicated in Fig. 3, along the line 1, 2, while upon the opposite side, the layer 7 is cut through by means of the knife 6 without, however, injuring the film carrier 8. There thus remains a superfluous piece 5'' which is connected with the main part 5 only through the film carrier 8. The carbon film on the piece 5'' is then covered with a piece of paper or varnish coating 11 (Fig. 4) to render it incapable of adhering to the printing form or cylinder. This coated and partially severed portion 5'' provides a gripping edge with the aid of which the sheet 5 is accurately introduced into the transfer device, a known form of which is shown in Fig. 5, wherein the copper cylinder is shown at 12 and the transfer cylinder, which may be of rubber, is shown at 13. As soon as the transfer device is set into motion, the carbon sheet 5, whose colored gelatinous coating has been made sticky and adhesive by moistening, as by means of steam, is drawn into the transfer device in correct alignment with the printing cylinder. As soon as the gripping edge has passed to the other side of the transfer device, the sticky carbon layer clings to the copper cylinder 12, so that the gripping edge is no longer necessary. This phase of the process is shown in Fig. 6. The superfluous edge is then removed, as shown in Fig. 7, which shows a plan view of Fig. 6 with the cylinder 13 removed. To facilitate the removal of the piece 5'', the carrier or backing sheet 8 may be partially cut or scratched along the line 3, 4 by the knife 6. Upon further rotation of the transfer device, the sheet 5 is rolled upon the cylinder 12 until the edges 1, 2 and 3, 4 meet whereupon the sheet completely surrounds the cylinder.

It will be readily understood that the gripping edge need not necessarily be part of the carbon sheet itself. For example, the carbon sheet may be of the exact size of the copy and a gripping edge may be produced by pasting on a strip with provision for easy removal, e. g. perforation. This gripping edge is likewise utilized as described above and the transfer operation is begun e. g. by moistening the intaglio printing cylinder. The gripping edge is torn off, as described, when the transfer operation is in progress; thus, both the edge which had the security edge affixed and its parallel edge

finally touch and form a seam upon completion of the transfer operation.

Moisture, however, is likely to penetrate the described seam while development is in progress resulting in a difference in etching velocities of portions in the neighbourhood of the seam as compared to other portions of the cylinder. This so-called underwash is a serious drawback which, according to the present invention may be overcome by applying a protective waterproof coating 14 (see Fig. 8) of e. g. varnish or caoutchouc before developing operations are commenced, thus preventing this undesirable action of the heated water, used as developing agent, and, when the heated water has acted sufficiently, a solvent is applied for the removal of the protective coating and the interrupted development is continued and completed. Finally the endless intaglio printing form is etched in known manner.

Having now particularly described and ascertained the nature of the present invention and the manner in which it is to be performed, I declare what I claim is:—

1. The improvement in the art of producing intaglio printing forms having an endless design, from bodies of rotation, such as metallic cylinders by a single transfer, which comprises copying the whole design upon a carbon sheet, providing the latter with a gripping portion, transferring the carbon sheet upon a printing form with the aid of said gripping portion, removing the latter, developing the carbon sheet after the transfer is completed, and etching the printing form.

2. The improvement in the art of producing intaglio printing forms having an endless design, from bodies of rotation, such as metallic cylinders by a single transfer, which comprises copying the whole design upon a carbon sheet larger than such design to provide a superfluous portion at one marginal edge of the design adapted to serve as a gripping portion, partially severing said gripping portion to facilitate its subsequent complete removal, covering said gripping portion with a non-adhesive coating, transferring the exposed sheet onto a printing form with the aid of said gripping portion, removing the latter after the transfer has commenced, developing the finished transfer, and etching the printing form.

3. The process as set forth in claim 5 wherein the carbon sheet is of a length equal to the periphery of the printing form, the gripping portion being pasted to said sheet and made easily removable therefrom.

4. The improvement in the art of producing intaglio printing forms having an endless design, from bodies of rotation, such as metallic cylinders, by a single transfer, which comprises copying the whole design upon

a carbon sheet, providing the latter with an easily detachable, non-adhesive gripping portion, transferring said sheet upon a printing form with the aid of said gripping portion, removing the latter after the transfer has commenced, coating the seam with a waterproof material, developing the film, removing the waterproof coating, continuing the developing and finally etching the printing form.

In witness whereof I signed my name hereinto on this 13th day of August, 1930.

KURT WOLFSOHN.

CERTIFICATE OF CORRECTION.

Patent No. 1,911,254.

May 30, 1933.

KURT WOLFSOHN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 121, claim 3, for the claim reference "5" read "1"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of October, A. D. 1933.

F. M. Hopkins

(Seal)

Acting Commissioner of Patents.

40

45

50

55

60

65

a carbon sheet, providing the latter with an easily detachable, non-adhesive gripping portion, transferring said sheet upon a printing form with the aid of said gripping portion, removing the latter after the transfer has commenced, coating the seam with a waterproof material, developing the film, removing the waterproof coating, continuing the developing and finally etching the printing form.

In witness whereof I signed my name hereinto on this 13th day of August, 1930.

KURT WOLFSOHN.

CERTIFICATE OF CORRECTION.

Patent No. 1,911,254.

May 30, 1933.

KURT WOLFSOHN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 121, claim 3, for the claim reference "5" read "1"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of October, A. D. 1933.

F. M. Hopkins

(Seal)

Acting Commissioner of Patents.

40

45

50

55

60

65