E. E. NOVOTNY.

INTAGLIO PLATE.

APPLICATION FILED DEC. 18, 1916.

1,357,339. Patented Nov. 2, 1920.

Fig. 1.

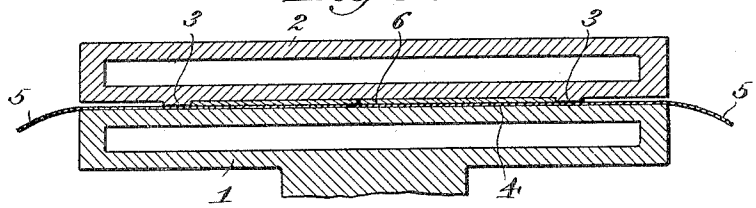


Fig. 2.

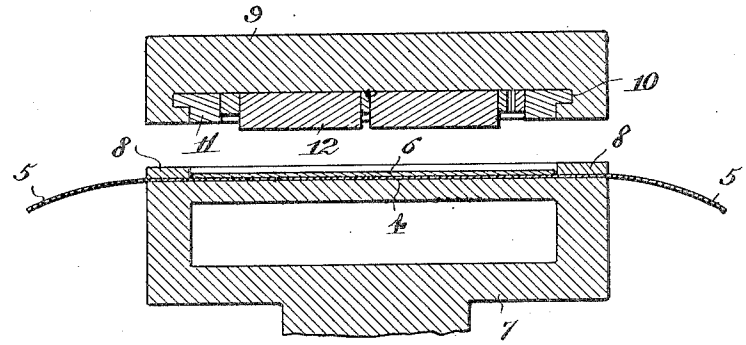


Fig. 3.

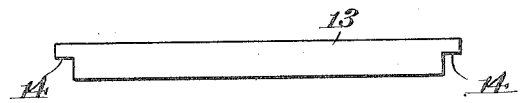


Fig. 4.

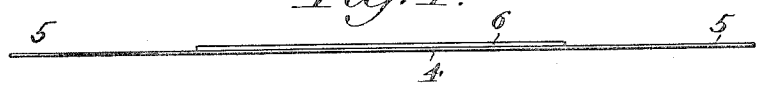
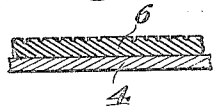


Fig. 5.



Inventor,

Emil E. Novotny.

By his Attorneys,

Meyers, Landman & Rea

UNITED STATES PATENT OFFICE.

EMIL E. NOVOTNY, OF RIVERSIDE, ILLINOIS, ASSIGNOR TO J. STOGDELL STOKES, OF MOORESTOWN, NEW JERSEY.

INTAGLIO-PLATE.

1,357,339. Specification of Letters Patent. Patented Nov. 2, 1920.

Application filed December 18, 1916. Serial No. 137,665.

To all whom it may concern:

Be it known that I, EMIL E. NOVOTNY, a citizen of the United States, residing at Riverside, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Intaglio-Plates, of which the following is a specification.

This invention relates to certain novel and useful improvements in printing plates, adapted for intaglio printing.

As is well known, intaglio printing is usually done through the agency of copper or brass plates which may be either flat or curved, these plates being etched or engraved with intaglio designs of varying depths through the practice of well known methods or processes. The result is that when it is desired to remove a design from the plate and to substitute another in its place it is necessary to grind off the first design and to subsequently polish the plate and then etch or engrave the other design thereon. The repeated grinding and re-grinding, polishing and re-polishing of the plate, be it flat or curved, naturally reduces the thickness of such plate and in the course of time renders it useless for further work, as is well known. Especially is the life of such a plate relatively short when the plate is in the nature of a cylinder intended for use on a rotary press inasmuch as the reduction of the diameter of the cylinder plate of course changes the relative peripheral speed of the cylinder with the paper and consequently renders it necessary to repeatedly adjust the press and paper to the proper speeds all of which necessitates the expenditure of considerable time and labor. Therefore, the use of such metallic plate for intaglio printing is a matter of considerable expense.

In the present instance it is my purpose to provide intaglio plates, either flat or cylindrical, which will obviate the necessity of grinding and polishing and which are applicable to any well known form of press, which are capable of withstanding the wear and tear to which such plates are subjected in the printing operation and through the chemical action of the inks, and which may be produced from a plastic material by an exceedingly simple process and at a relatively small expense when compared with the cost of etched or engraved plates.

Another advantage incident to my invention is that any number of duplicate plates may be molded or cast in one establishment, and then sent out to such printing plants as may require the same, this being particularly convenient in the case of newspapers published in various sections of the country and which are accustomed to publish weekly or so the stock inside sheets or pages known as pictorial sheets or supplements.

With the above recited objects and others of a similar nature in view my invention consists in the improved intaglio plate and in the method of making the same set forth in and falling within the scope of the appended claim.

In the accompanying drawings,

Figure 1 is a cross sectional view taken through a press and showing one step in the formation of the plate.

Fig. 2 is a cross sectional view taken through a press and showing a second step in the formation of the plate and illustrating the use of the depression forming types or plates in making the intaglio plate.

Fig. 3 is an end view of a block which is to be substituted for the chase after the operation in Fig. 2 has been performed.

Fig. 4 is a cross sectional view of a complete plate.

Fig. 5 is a view in elevation of a portion of the plate shown in Fig. 4 but on an enlarged scale.

It is to be understood that my invention is applicable to the making of curved or cylindrical plates as well as to the manufacture of flat plates and the reference to the figures of the accompanying drawings will be sufficient for the understanding of the invention in connection with both types of plates. By way of illustration I will describe the invention in connection with the making of a curved plate for use on a cylindrical press. Under such circumstances the flat plate, shown in Fig. 4, is intended to be subsequently bowed or curved to fit a cylindrical press and to be fastened thereto as hereafter described.

Referring to Fig. 1 the numeral 1 indicates the bed of a suitable press while 2 is the top platen thereof, the under or pressure face of which is formed with a pair of spaced parallel flanges 3 which are used as guides or stops to determine the width and thickness of the impression-receiving plastic

sheet or layer which is to form a part of the plate. On the bed 1 of the press I first place a sheet 4 of paper or other suitable flexible-sheet-like material, the opposite side edges 5 of which preferably project beyond the adjacent sides of the press. Upon this paper sheet 4, which is of course fibrous in its nature, I impose a layer or sheet 6 of a phenolic condensation product, such as bakelite or condensite. As is well known such materials or products are synthetic resins, which when completely set constitute a hard, infusible incompressible and durable body. At the time of placing this phenolic sheet 6 upon the sheet 4 it is in a relatively soft, workable approximately plastic state and is approximately equal in width to the distance between the confronting faces of the flanges 3—3. The press is now closed to force this phenolic sheet 6 against the paper sheet 4 so as to cohere with the latter and at the same time the phenolic sheet is flattened and smoothed so as to have a polished surface. The paper sheet 4 with the phenolic sheet 6 adhering thereto is now removed from the press.

In making such a composite plate as just described, I prefer that the phenolic material or sheet shall embody a relatively high percentage of any porous filler matter, such as wood flour, kaolin and the like, which will tend to retard or reduce the surface flow of such phenolic material when the latter is heated and partially compressed. If desired, such composite plates may be made in quantities by the manufacturer and shipped to printers, engravers and others who may desire to make their own intaglio plates from such composite plates. In making the intaglio plate a composite sheet formed as described of a paper backing sheet 4 and a phenolic facing sheet 6 is placed upon the bed 7 of a heated press, suitable stops or bearer bars 8 being arranged at opposite side edges of the phenolic sheet or layer 6, and these stops or bearer bars 8 may also engage and clamp the projecting sections of the paper sheet 5, as shown in Fig. 2. The top platen 9 of this press is formed with a grooved guideway 10 in which is inserted a stepped chase 11 having locked therein type, plates, or the like shown at 12, and which represent the matter to be reproduced in the intaglio plate. I should mention that the matter shown at 12 must be a relievo or positive type, plate or the like instead of the ordinary negative type or plate commonly used in printing in order to produce in the confronting face of the phenolic sheet or layer 6 negative ink-receiving depressions which, when the plate is in use, will of course reproduce positive printed matter upon the paper sheet. The platen 9 carrying the type or plate 12 is now lowered in contact with the phenolic layer or face 6 until the confronting face of this top platen 9 rests upon the bearer bars 8, at which time the depression forming portions of the type or plate 12 will be impressed into the phenolic layer or sheet 6 which is heated in any suitable manner, such as by heat applied to the bed 7. Of course the bearer bars or stops 8 are of a selected or predetermined height to regulate the depth of penetration of the depression producing portions of the type or plate 12. In the matter of regulating the depth of penetration of the type or plate 12, it will be understood that when an intaglio plate is being produced as herein set forth it is only necessary to form very shallow ink holding type depressions in the phenolic layer or sheet, so that the molding type body does not penetrate to any appreciable extent. This is because in intaglio printing the depth of impression determines the thickness of the film of ink deposited on the paper in printing and as this film of ink is of course of infinitesimal thickness it is only necessary to make very shallow depressions in the phenolic plate, or depressions just deep enough to hold the film of ink. After the depressions have been thus produced in the phenolic layer or sheet 6 the upper platen is raised, the chase removed therefrom and the flat block 13 shown in Fig. 3 is inserted in the upper platen in the place of the chase. This block 13 is in the nature of a hard, smooth, polished body having flat parallel faces, the flanged side edges 14 of the block interlocking in the adjacent sections of the grooved portion of the platen 9. The top platen 9 with the block 13 inserted thereon is now lowered into contact with the confronting or top face of the phenolic layer or sheet 6 with just sufficient pressure to smooth or polish and accurately flatten such top face, to give it as perfect a level as possible and without in any manner distorting or destroying the type depressions previously made. The phenolic layer or sheet 6 at this time is still in a relatively soft condition, and when it has been smoothed or leveled as mentioned, it is permitted to harden or set to some extent, but not sufficiently to prevent its being rolled, flexed or bent into approximately cylindrical form as hereinafter mentioned. The plate will now appear as shown in Figs. 4 and 5; that is to say, with the phenolic sheet having ink-receiving type or printing depressions sharply defined in one face thereof, such layer or sheet in turn being mounted upon a flexible paper backing sheet having opposite side edges projecting beyond or forming laps at opposite sides of this phenolic layer or sheet. In this condition the sheet is ready to be curved or rolled into approximately

cylindrical form about the cylinder of a printing press for the purpose of performing the printing operation, the phenolic sheet at this time still of course retaining a certain degree of heat and flexibility. Of course if the plate is to be used in its flat form, instead of being curved, the phenolic face layer therof may be hardened or set in any suitable manner and to a suitable degree, all depending upon the character of the phenolic condensation product employed and upon the specific conditions under which the work is being performed.

Thus it will be noted that instead of having to re-shape, or re-grind and re-polish a printing press cylinder as is necessary with ordinary intaglio printing and which consequently results in reducing the diameter of the cylinder, it is only required that one of my plates be removed from such a cylinder and another previously prepared plate substituted therefor for another run of the work. And in this connection, it is to be noted that my plates may be prepared very quickly and with relatively little expense when compared with an ordinary copper cylinder plate, or flat plate, or etching intended to be used for intaglio printing, so that even in its initial cost when all the factors of saving are concerned, my plate is a much more economical proposition.

It will be noted that with either the flat plate or the cylindrical plate I obviate entirely the necessity of hand engraving, as my intaglio printing faces are made by molding while at the same time when completed, I am enabled to get results from the standpoint of printing which is just as satisfactory, as clear cut and as sharp as those obtained with etched or engraved plates.

While I have herein shown and described the preferred embodiment of my invention, I wish it to be understood that I do not confine myself to all the precise details of construction herein set forth by way of illustration, as modification and variation may be made without departing from the spirit of the invention or exceeding the scope of the appended claim.

What I claim is:

A flexible intaglio printing plate comprising a flexible backing sheet, and a hard and set face portion of synthetic resin imposed on said backing sheet and provided with ink-holding depressions to constitute a printing face.

In testimony whereof I affix my signature.

EMIL E. NOVOTNY.