

1,377,504.

E. E. NOVOTNY.
ELECTROTYPE PRINTING PLATE.
APPLICATION FILED DEC. 1, 1916.

Patented May 10, 1921.

Fig. 1.

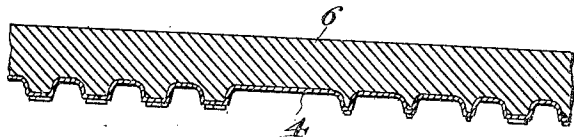


Fig. 2.

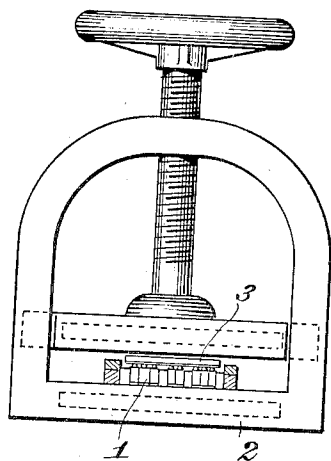
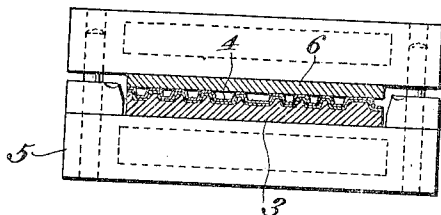


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ELECTROTYPE PRINTING-PLATE.

1,377,504.

Specification of Letters Patent.

Patented May 10, 1921.

Application filed December 1, 1916. Serial No. 134,325.

To all whom it may concern:

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

This invention relates to plates such as are used in printing and embossing, and in the method of making the same.

In carrying out my invention I have particularly in view the backing up of printing elements, such as electrotpe shells, etchings, stereotypes, or the like, and while I have in the present instance shown and described my invention as employed for backing up an electrotpe shell, this is merely by way of illustration, as it will be understood that the invention is not limited in its useful application to this particular purpose.

In the preferred form of the invention herein shown and described, I have in view the backing of the ordinary electrotpe shell or any impression face with a body of plastic or cementitious material, preferably in the nature of a phenolic condensation product, such as "bakelite," "condensite" or the like. I preferably employ such material in some or any of its numerous forms, because, as is well known, it possesses manifest advantages from the standpoints of strength, incompressibility, durability and solidity, and when used as described herein, that is, as a backing for the shell, it will closely adhere to and completely fill the interstices, or hollows of the facing or impression-producing sheet, with which it is united. In some of its forms this phenolic product may be softened and re-softened and repeatedly remolded, while in other forms when once set it assumes an infusible state and cannot be re-softened for remolding under ordinary pressures. When I employ this product which may be re-softened by heat or an increase of heat and consequently re-molded, economy is attained in the amount or mass of the material employed, as a number of molds, different perhaps in contour may be made by re-working the same mass of material.

Another object of my invention is to provide a plate of this character which will embody an electrolytic shell forming the impression-producing or printing face of the plate, and which shell is backed by a plastic

or cementitious material such as above mentioned, in such manner that the battering down, distortion or rapid wearing of the face of the plate during use on the printing press will be obviated, due primarily to the fact that such electrolytic face sheet is solidly backed by a mass of material, which is not compressible under ordinary printing strains and which may be molded against the back of such impression producing face sheet as to be practically homogeneous therewith, thus leaving no hollows or depressions between the face plate and the backing sheet which might be subjected to the crushing action of the press.

A further object of the invention is the provision of a plate which may be made by such a simple method, that the expert work usually required in the preparation of an ordinary electrotpe plate, such as the rough planing of the back, pounding down of the face against a level plate, leveling of the surface of the plate so that there will be no perceptible rocking to such surface, the routing of non-printing portions, final shaving of the back of the plate and the finishing operation of beveling or trimming the edge of the plate, is eliminated, as these various steps or operations essential in the making of the usual electrotpe are taken care of in the molding of the plate constituting the present invention.

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

In the drawings:

Figure 1 is a vertical cross sectional view taken through a printing plate embodying my invention.

Fig. 2 is a view illustrating the step for making the matrix for molding the plate.

Fig. 3 is a view showing the molding of the plate.

In the practice of my invention I preferably proceed as follows: A type form usually comprising a body of type locked in the ordinary chase and herein conventionally shown at 1 is placed on the bed of a suitable press conventionally illustrated at 2, and on the face of this type is placed a mold-forming sheet indicated by the numeral 3, this sheet preferably being of composite

form, that is to say, is made up of a facing sheet of lead and a backing sheet of a phenolic condensation product, such as "condensite" for instance. Such a sheet forms the subject matter of my co-pending application No. 98,909 filed May 20, 1916. The lead facing sheet of such a composite sheet is placed in contact with the type faces and the press is operated to embed the type in this composite sheet thus forming therein the indentations or depressions which are complementary or correspond to the type faces. Thus a matrix or mold is constructed.

The matrix is now removed from the press and the lead face thereof may be chemically cleaned with any suitable chemical and it is then treated in any desired manner, such for instance as by the application of potassium hydroxid. This is to prevent the subsequent permanent union of the electrolytically deposited shell, with the surface of the mold, or in other words, to insure that the shell may be stripped from the matrix or mold. The mold is immersed in an ordinary electrolytic bath so that a suitable film or deposit of copper will be applied to the lead face of the mold, this film of course faithfully reproducing the molding face of the matrix. Of course instead of forming the film through immersion in an electrolytic bath such film may be made upon the face of the mold by the well known metallic spraying method.

After a film of sufficient thickness has thus been deposited on the face of the matrix, the latter is removed from the bath, or from the influence of the spray and the back face of this film or coating, or that face which is to lie in contact with the plastic backing material in the formation of the complete plate, is now preferably coated with a liquid phenolic varnish, and while such varnish is still in a "tacky" condition, it is dusted with an absorbent, inert material such as wood flour, the varnish and the wood flour being intended to form a binder between the electrolytic shell and the plastic backing when the latter is applied. However, it may be that it will not be necessary to employ this binder, as there may be sufficient "back draft" or anchoring means formed on the back of the electrolytic shell to insure the adhesion of such shell with the plastic backing when the latter is molded against such shell as hereinafter described. The matrix with the electrolytic shell 4 thereon is now put in a casting box conventionally shown at 5 with the back of the mold resting upon the back of the casting box and the electrolytic shell uppermost. I now impose upon the electrolytic shell a sheet of phenolic condensation product, shown at 6, this sheet being of sufficient plasticity to be readily molded or formed under heat and pressure or pressure and cooling.

The casting box is now placed in a suitable press and sufficient pressure exerted against the phenolic sheet 6 to force the latter against the electrolytic shell 4 in such manner that the phenolic material will closely adhere to the contacting face of the shell and will flow into or fill all the hollows and interstices therein, the binder above referred to insuring that the phenolic sheet will be firmly united to the electrolytic shell. The assembled elements are permitted to remain in the casting box and its press for a sufficient length of time, say from one to five minutes, and under the influence of heat and pressure, or heat and cooling, until the phenolic backing is set or hardened. These assembled elements may then be removed from the press and casting box and stripped from the matrix with the result that the completely finished plate comprising an impression-producing or printing face formed of the electrolytic shell firmly backed up by the phenolic condensation product is obtained, and the impression or printing surface of this plate is of course complementary to the molding face of the matrix or is a practical duplicate of the type printing surface of the original type body.

If desired, the mold for an electrolytic shell may be made in the ordinary manner as now practised in the art, and of materials such as wax or lead, and these molds caused to receive the usual electrolytic deposits forming the shells which are stripped or removed from the mold in the usual manner. By backing up the non-printing portions of these shells with a suitable filling material or cement such as "plaster of Paris" and coating the back of the shells with a volatile phenolic varnish over which is dusted a binding material such as wood flour, we may now place these in the casting box and back them up with the phenolic condensation material, as described above. In this instance the "plaster of Paris" will act as a support to prevent the breaking down of the non-printing elevations of the shells during the application of the phenolic backing, but this of course is not necessary in the preferred form where a rigid backed matrix is used, as hereinbefore described.

In the case of etchings, stereotypes and electrotypes, the latter including, both the shell and the usual backing, the same method of backing the plate with the phenolic condensation product may be followed, but in these latter cases of course the electroplating with the bath or spray is omitted, the particular etched plate, electrotypes or stereotype being placed in the casting box, the binder applied thereto and the phenolic backing then placed in position as before mentioned.

It will be noted that in the present case in contradistinction to employing a solid

or homogeneous sheet of metal for the printing or impression-producing face of my improved plate I resort to the use of a sheet of metal which possesses a certain degree of porosity, due to the manner in which it is formed, such formation being accomplished, as hereinbefore recited, either by the electrolytic process, or by spraying the metal against the molding face of the matrix.

While I have herein shown and described the preferred embodiment of my invention, it will of course be understood that I do not limit myself to all the precise details 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 claims. For instance, it will of course be understood that the invention, while shown herein as applied to flat plates, may also be applied to curved or cylindrical plates, such as are adapted for use in connection with rotary presses.

What I claim is:

1. A printing plate of the class described comprising a facing sheet composed of an electrolytic shell having type characters constituting a printing face and a backing therefor including a relatively hard and set synthetic resinous material permanently united therewith.

2. The herein described method of forming

a printing plate which comprises subjecting the matrix to the action of a bath of metal to produce a metallic film on the molding face of said matrix, backing said metallic film with a body of a synthetic resin material in a condition wherein it may be molded, subjecting said moldable synthetic resin to both heat and pressure to cause the synthetic resin material to be molded on and to set and harden on the metallic film and to constitute a backing therefor.

3. The herein described method of forming a printing plate which comprises subjecting the matrix to the action of a bath of metal to produce a metallic film on the molding face of said matrix, backing said metallic film with a body of a moldable phenolic condensation product while still in the matrix, subjecting said phenolic condensation product to heat and pressure while in contact with the metallic film when the latter is on the matrix to cause said phenolic condensation product to be molded, to harden and set on the metallic film and to constitute a backing therefor, and subsequently stripping said film with its hardened and set backing from the matrix.

Signed at New York, in the county of New York and State of New York, this 25th day of November, A. D. 1916.

EMIL E. NOVOTNY.