E. E. NOVOTNY.

RECTIFICATION OF PRINTING PLATES.

APPLICATION FILED AUG. 6, 1918.

1,377,515. Patented May 10, 1921.

Fig. 1.

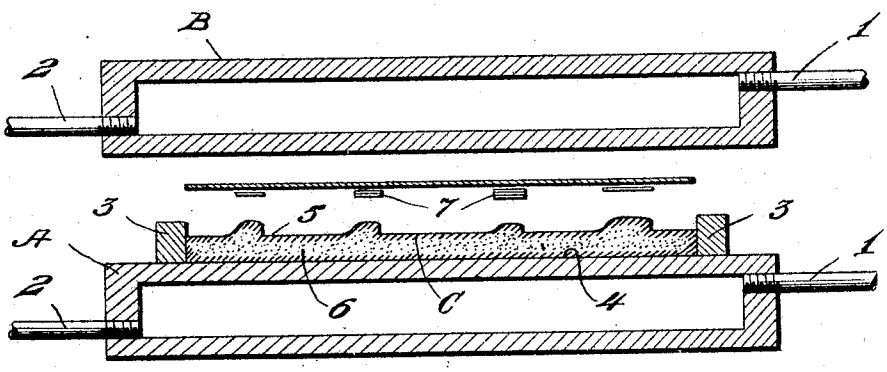


Fig. 2.

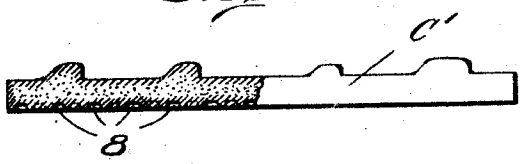
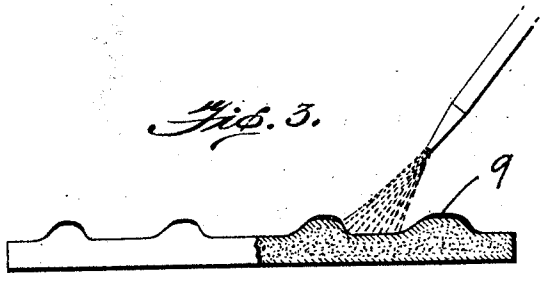


Fig. 3.



Inventor,
Emil E. Novotny
By Meyers, Cushman & Lea
Attorneys.

UNITED STATES PATENT OFFICE.

EMIL E. NOVOTNY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO J. STOGDELL STOKES, OF MOORESTOWN, NEW JERSEY.

RECTIFICATION OF PRINTING-PLATES.

1,377,515. Specification of Letters Patent. Patented May 10, 1921.

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To all whom it may concern:

Be it known that I, EMIL E. NOVOTNY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Rectification of Printing-Plates, of which the following is a specification.

This invention relates to the manufacture of printing plates and has particular application to the rectification of molded printing plates and such as are made from a plastic material as bakelite, condensite or other synthetic resin.

In carrying out my invention it is my purpose to provide a rapid and ready method of leveling printing plates and of incorporating therein the required regularities and irregularities such as are practised in the printing art and usually termed "make ready." Half-tones and original type matter when assembled in a type form or chase frequently present irregularities in height, or in some instances possess concaved or rounded or imperfect type faces due to wear incident to use in printing operations. Of course it is desirable that a printing plate produced from a matrix made from such a body of type or from such a half-tone shall possess a true and perfect printing face notwithstanding these initial imperfections.

Furthermore a printer usually requires certain make-ready on the type matter and cuts to secure that distribution of pressure which is required to produce high class printing and it is desirable to incorporate this make-ready in the molded plate before it is placed on the press. In electrotyping it is the practice to eliminate these errors or irregularities in the plate by pounding the back of the electrotype while its face is in contact with the level surface plate, but this method of rectifying the plate is unsatisfactory and does not permit the attainment of accuracy in the cross-sectional thickness of the plate nor does it allow of the introduction of make-ready corrections into the body of the plate.

In plastic plate making, or where printing plates are made by means of a molding operation, it is impossible to pound out irregularities as is done with electrotypes and it is therefore desirable to resort to other means to secure the necessary rectification of the plate. In the manufacture of synthetic resinous printing plates, such as those made from bakelite or condensite, I have found that by using a body material which is not compressed beyond its elastic limit, but which may be further slightly compressed after the printing characters have been molded on the face of the plate, such a plate may be rectified or corrected in such a manner as to obtain uniformity in the height of the letters as well as uniformity in the cross section of the plate, and to employ make-ready in the rectification process. These necessary and desired corrections may be accomplished because of the fact that in the molding of a plastic plate under heat and pressure, the plate is subjected to a molding operation for just a sufficient length of time to bake a hard film or skin on each face of the plate, while the interior of the plate will remain relatively soft when compared with the exterior surface. The result will be that such a plate may be placed in a press while in a heated condition and subjected to pressure between the level platens of the press so as to level the printing surface, as well as the back of the plate by forcing the uneven portions or irregularities of the hardened skin back toward the relatively soft interior portion of the plate, the interior portion yielding sufficiently without lateral flow or spread, to accommodate or compensate for the backward pressure of the hardened irregularity of the surface sections of the plate.

In the accompanying drawings Figure 1 shows a cross sectional view of a printing press plate composition between two platens of a suitable press preparatory to rectifying the plate by leveling and the introduction of make-ready.

Fig. 2 is a cross sectional view of another form of printing plate which may be corrected in accordance with my method.

Fig. 3 is a view partly in elevation and partly in section showing a printing plate coated on its printing surfaces with a waxy substance, the non-printing portions of the plate being exposed to the action of a sand blast for the purpose of deepening the same.

Referring now to the accompanying drawings in detail: The letter A indicates the lower hollow platen of the press while B designates the upper hollow platen thereof,

with these plates having steam inlets 1 and steam outlets 2. Upon the level face of the lower platen I mount suitable bearers 3, in the nature of bars of desired or requisite height usually plate high. The letter C indicates the molded printing plate to be corrected or rectified, and which plate is made from a body of plastic material such as a synthetic resin, this plate having been previously formed so that the bottom face 4 thereof and the upper printing face 5 are relatively harder than the intermediate or interior portion 6 of the plate. This occurs in the baking operation in molding the plate, because the outer surfaces of the plate will bake or cook until a hard shell like skin or film is formed around the plate, this synthetic resinous material being a poor conductor of heat so that the outer surface portions will bake more readily than the interior of the plate body. If it be desired to correct such a plate it may be preliminarily heated either in a separate oven, or in the press and is then placed as shown in Fig. 1 upon the lower plate, and with the bearers arranged at opposite sides of the plate to limit the closing of the platens. If it is not desired to incorporate separate make-ready in the plate the platens may be simply closed to force the back 4 of the plate flat against the face of the bottom platen of the press and to force such irregularities as may appear in the type surface of the plate down toward the interior of the plate, the material of the interior of the plate being displaceable, or capable of yielding sufficiently to permit of this so that the high sections of the type surface will be depressed or sunk to the proper level thereby enabling a plate of uniform thickness and height of type to be made.

If it be desired to form a printing face of the plate with certain regularities or irregularities to compensate for press errors or for the peculiarities of a particular press, suitable negative make-ready such as is shown at 7, and which is well known in the art, may be laid or placed upon the printing surface of the plate in proper coincidence with the type sections of the plate which are to be corrected by this make-ready, and the platens of the press may then be closed to force the make-ready against the subjacent printing surface of the plate, and of course these sections will be forced or sunk toward the interior of the plate and the necessary correction thereby obtained.

In Fig. 1 it will be noted that the back of the plate C is substantially smooth while in Fig. 2 I have shown a modified form of the plate indicated by C^1 and in this instance the bottom face of the plate is formed with a field or cone shaped dots, or is pitted as shown at 8, the purpose of so forming the back face of the plate being to allow for compression from the back of the plate inward toward the center thereof, as well as toward the face of the plate, thus permitting of more leeway in the leveling and correction of the plate than can be obtained where the back of the plate is smooth in the first instance as is shown in Fig. 1. Therefore in the preparation of my printing plates I prefer, in initially making the plate, that is to say prior to its correction, to mold the plates with dots, pits or depressions in the back face thereof. Of course when make-ready is used in making the correction such make-ready is removed after the rectification of the plate has been accomplished. This method of leveling and of treating the plates with make-ready enables me to manufacture plates from type matter which is not of proper printing standards, and also permits of the leveling operation being accomplished in a simple and speedy manner at the time of incorporating the make-ready and also provides for obtaining a plate of a predetermined level and of uniform thickness. From a printing standpoint it enables me to make a printing plate which requires no make-ready when applied to the printing press and enables the pressman to obtain a maximum production from a printing machine with little or no delay in machine attention or activity.

In some instances the leveling of the plate may decrease the depth of the non-printing parts of the printing surface of the plate and then again on occasions it may be desired to obtain greater depth in non-printing parts. Under such conditions I may apply to the printing surface of the plate a greasy or waxy paste 9 composed for instance of beeswax and rosin oil, the application of the paste being made by means of a printing roller or cloth swab, or any other suitable tool. The paste is applied only to the printing portions of the printing plate and will act as a protective coating for those parts. The unprotected non-printing portions of such a coated plate may then be subjected to a sand blast applied by any suitable apparatus, or instead of sand, carborundum, emery or other suitable granular substance may be employed. The application of such a blast will cause the non-printing parts to be cut away to any desired depth at great speed thus making it an exceedingly simple operation to rectify shallow, non-printing parts in certain types of printing plates.

What I claim is:

The herein described method of rectifying a molded printing plate made from a plastic substance, which consists in first molding a plate under heat and pressure for a sufficient length of time to obtain relatively hard, skin-like face and back portions

and provide a printing surface for the face portion, the interior portion of the plate remaining relatively soft and capable of limited displacement under subsequent pressure, and subsequently subjecting said plate while in a heated condition to pressure to force irregularities in the hard printing face inward in the body of the plate and in opposition to the soft displaceable interior portion of such plate, and while maintaining the back portion of the plate in a substantially flat and level condition.

In testimony whereof I have hereunto set my hand.

EMIL E. NOVOTNY.