

M. A. DROITCOUR.
METHOD OF MAKING PRINTING PLATES.
APPLICATION FILED JAN. 2, 1909.

952,312.

Patented Mar. 15, 1910.

Fig. 1.

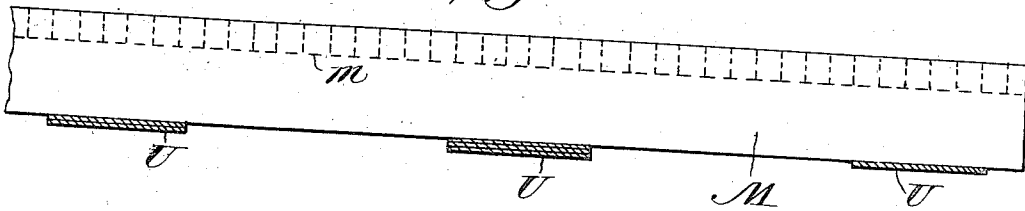


Fig. 2.

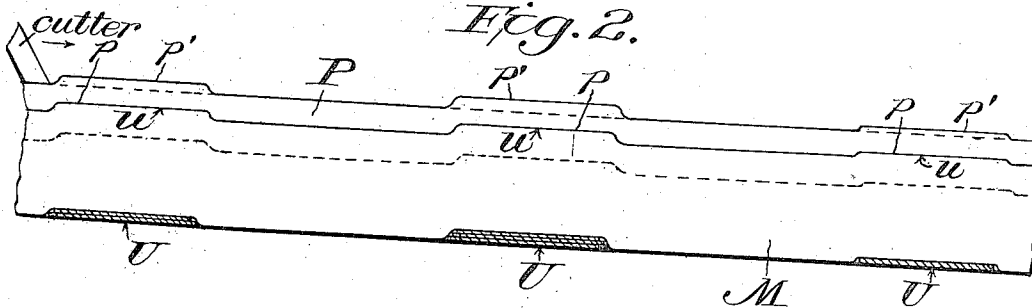


Fig. 3.

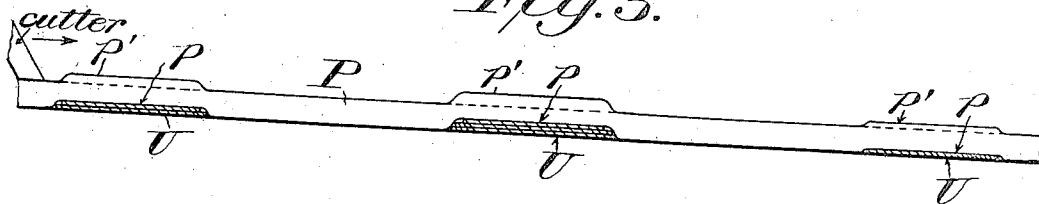


Fig. 4.



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METHOD OF MAKING PRINTING-PLATES.

952,312.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed January 2, 1909. Serial No. 470,468.

To all whom it may concern:

Be it known that I, MICHAEL A. DROITCOUR, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Methods of Making Printing-Plates; of which the following is a specification.

In fine printing it is necessary to have severe pressure on those portions of the printing surface which produce what is commonly called the "solid" parts of the impression, and less pressure on those portions of the printing surface which produce the "high lights" of the impression, and it is customary among printers because of this, to increase the height of the "solid" portions of the form by placing one or more thicknesses of paper or "underlay" under such portions, or to build up or "overlay" the portions of the impression cylinder coming in contact with such "solid" portions of the form.

By my invention I so treat the matrices, from which the printing plates are formed, that in the process of making the plates from plastic material, such as celluloid they will be given increased thickness where necessary to produce the desired "solids" and be thinned where "high lights" are desired, and the printer can use such plates without placing any "underlay" under the form or "overlay" on the cylinder.

My invention consists in the novel process of making such printing plates from plastic material, and is described as follows:

To facilitate ready comprehension of the process I will refer to the accompanying diagrammatic drawings in which:

Figure 1 is an enlarged view of part of a matrix. Fig. 2 is a view of such matrix with underlays applied thereto, also showing a plate pressed thereon. Fig. 3 is a view of such plate removed from the mold in Fig. 2 and supported on the underlay. Fig. 4 is a sectional view of a finished plate.

In making the matrix several sheets or layers of matrix paper, are pasted together with any of the well known pastes used by stereotypers, but I preferably use the paste described in my application Serial Number 488,804 filed April 9, 1909, and when the matrix blank is properly seasoned and ready for use, it is laid upon the form from which the matrix is to be made, and pressed against the same by flat or platen pressure—prefer-

ably applied simultaneously to all parts of the blank by suitable means, and then set the matrix under heat and pressure while in contact with the form. The matrix M thus formed will have the same thickness throughout, from back to the inner face of the intaglio type-matrices therein, as indicated by the dotted line *m* in Fig. 1, if care has been taken to have the form in proper condition at the time the impression is taken on the matrix. In some cases, I prefer to give the matrix a metallic face in order to preserve the fine lines, or screen in half-tone work, and this I do by facing the matrix blank with a sheet of tin-foil, and then pressing them into the form and set them with heat. Before making a printing plate from such matrix, I place under the rear face of the "high light" portions of the matrix one or more layers or underlays U of paper, which of course thicken such portions of the matrix, in accordance with the "tone" desired for the subject, so that printing plate P made from such matrix will have portions *p* corresponding to the raised portions *u* of the matrix, the portions *p* forming slight depressions in the printing surface of the plate; and parts *p'* form corresponding protuberances *p'* on the back of the plate before it is finished. These projections on the back of the plate are removed, as hereinafter described, to reduce the back of plate to a uniform plane surface, consequently the finished plate will be thinner at the points *p*, the "high lights," see Fig. 4. I thus lessen the pressure which will be exerted upon the thin portions of the plate by the cylinder or platen when printing therefrom. The thickening of the matrix by the underlays U is of course graduated to suit the nature of the subject to be printed.

From the above described matrix having the underlaid high-light portions, I proceed to make printing plates of plastic material as follows: A sheet of celluloid or other plastic material P capable of being softened so it can be molded upon the matrix and afterward hardened, is suitably softened and then laid directly on the face of the matrix, and is put under pressure so that the softened celluloid or other plastic material is forced to conform to the depressions of the matrix, see Fig. 2. The consequence is that the printing surface of the material or plate P is formed exactly the

reverse of the matrix face; while the reverse face of the plate has protuberances *p'* thereon at points corresponding to the underlays U in the matrix, see Fig. 2. After the plate P is thus formed, I shave or grind the rear or under surface of it to remove the protuberances, either while its printing face is still in contact with and supported by the matrix see Fig. 2, or supported by the underlays U, see Fig. 3, so such rear surface will be made plane and smooth. As a result of this shaving the plate will be of irregular thickness between its rear face and its printing face exactly in accordance with and in proportion to the thicknesses of the original underlays; and such plate will be thicker on "solids" and thinner on "high lights", therefore while the back of the plate is plane-surfaced its printing surface is uneven. While the plate is being shaved or ground its printing face must be supported at all the thin points by the matrix or the underlay so that the plate cannot spring or yield under the knives or cutters and so that its printing surface is not subjected to any pressure which can injure it, or distort the material in it, or stretch it, or leave any weak pockets in it, which would affect its register in color printing. The back of the plate P is usually an integral part thereof or a filler which adheres thereto. The plate is finished and ready for use when thus shaved or ground. By thus shaving the plate while its printing face is supported as described, I do not add to the raised part of the printing face, but the thickness of the plate at the high light portions is reduced slightly more than that at the solid portions, as shown in Fig. 4.

Instead of shaving or finishing the plate while it is supported by the formative matrix, it can be removed from such matrix, and supported on its printing face, while it is being shaved, by the same underlay which was under the formative matrix when the plate was molded upon it see Fig. 3. This obviates the possibility of injury to the matrix itself that might occur if the matrix and plate were not in exact register at the time of shaving the latter; while at the same time the plate will be finished properly with its high light portions thinned to the extent desired. The finished plate has a perfectly plane surfaced back and an unequally surfaced printing face, the high light portions being slightly lower than the other portions of the plate, see Fig. 4.

Having thus described my invention what I claim as new and desire to secure by Letters Patent thereon is:

1. The improved process of making printing plates from plastic material, consisting in forming a matrix; then applying suitable underlays to the back of the matrix; then applying a blank of suitable material in a plastic condition to the face of the matrix; then pressing the blank against the matrix to form a plate having depressions in its printing surface corresponding to the overlays on the back of the matrix, and protuberances on its back corresponding to the depressions in its face; then supporting the printing face of the plate at the depressions and removing the projections on the back of the plate.
2. The herein described process of making printing plates from plastic material; consisting in first forming a suitable matrix, second applying underlays to the back of the matrix; third placing a blank of plastic material on the face of the matrix and applying pressure thereto, thereby forming depressions on the surface of the resultant plate corresponding to the overlays on the back of the matrix, and protuberances on the back of the plate corresponding with the depressions in its face; then shaving or grinding the back of the plate to remove such protuberances and reduce the back of the plate to a plane surface without changing the printing face thereof.
3. The improved process of making printing plates from plastic material, consisting in forming a suitable matrix; then applying suitable underlays to the back of the matrix at the desired points; then applying a blank of suitable material in a plastic condition to the face of the matrix; then compressing the blank, matrix, and underlays to form a plate having depressions in its printing surface corresponding to the overlays on the back of the matrix, and protuberances on its back corresponding to the depressions in its face; then placing the printing face of the plate upon the matrix underlays and shaving or grinding the back of the plate while supported on such underlays to remove said protuberances and reduce the back of the plate to a plane surface without changing the printing face thereof.

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Witnesses:

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