Apr. 10, 1923. 1,451,162

H. A. HERR

METHOD OF PRODUCING A MATRIX

Filed Jan. 2, 1923 2 sheets-sheet 1

Fig. 1



Fig. 3



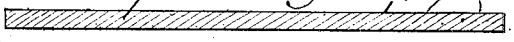


Fig. 2

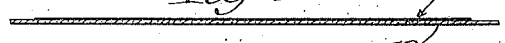


Fig. 4

Fig. 5



Fig. 7



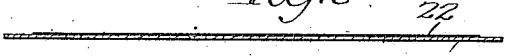


Fig. 6

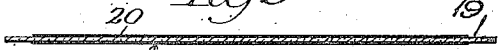


Fig 8

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Fig. 9

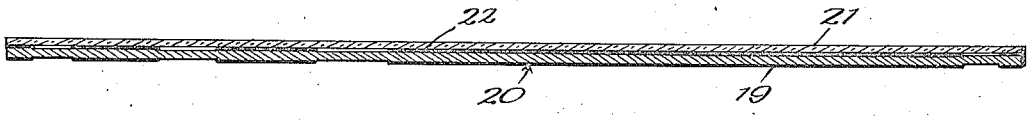


Fig. 10

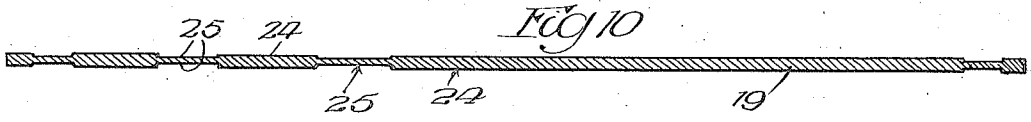
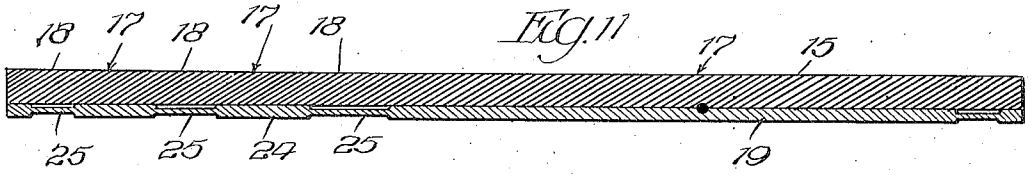


Fig. 11



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UNITED STATES PATENT OFFICE.

HENRY A. HERR, OF CHICAGO, ILLINOIS.

METHOD OF PRODUCING A MATRIX.

Application filed January 2, 1923. Serial No. 610,212.

To all whom it may concern:

Be it known that I, HENRY A. HERR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of Producing a Matrix, of which the following is a specification.

This invention relates to an improved method or process of producing or forming a matrix for use in the preparation of a printing plate.

Heretofore in the manufacture of printing plates it has not been possible to produce a plate, the printing surface of which is so nearly perfect that the printer may perform the printing work therefrom just as it is received from the maker, due to the fact that certain portions of the face of the plate known as "high lights" are not always properly positioned with respect to the other portions of the printing surface of the printing plate known as "solids," that the solids will print heavier than the "high light" portions.

The methods heretofore employed in preparing the plates to overcome these difficulties so that the desired impression or printing may be obtained therefrom consists in an operation commonly known as "make ready" and which consists in "underlaying" the plate and "overlaying" on the impression member. Other methods consist in cutting away portions of a proof which are to be printed heavier and adding to the portions of the proof sheets pieces of paper or the like at those portions of the impression that are to print lighter.

These proof sheets thus prepared have been employed as a matrix which is applied to the face of the plate and pressure exerted thereupon to produce in the face of the plate a series of depressions and elevations reverse to the depressions and elevations in the matrix.

The preparation of the "make ready" in these prior methods and in all other methods, is not only a laborious undertaking but is very expensive.

To overcome these difficulties and objections and to provide an improved method of producing a matrix which will obviate the necessity of the building up or cutting away of proofs and save the expensive "make ready" operation, and whereby the amount of labor necessary and the expense of producing the matrix is materially reduced, is one of the objects of the present invention.

A further object is to provide an improved method of producing a matrix of this character which will not be destroyed when once used, but which may be used over again.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in substantially the herein described method of forming a matrix as shown in the accompanying drawings illustrating a method or process of carrying this invention into operation.

In the drawing

Figure 1 illustrates the face of the printing or electrotype plate which is to be treated with this improved method or process.

Figure 2 is a sectional view taken on line 2—2, Figure 1.

Figure 3 is a view of the obverse face of the matrix.

Figure 4 is a sectional view taken on line 4—4, Figure 3.

Figure 5 is a view of a proof sheet which has been pulled from the plate shown in Figure 1.

Figure 6 is a sectional view taken on line 6—6, Figure 5.

Figure 7 is a view of the reverse face of the matrix.

Figure 8 is a sectional view taken on line 8—8, Figure 7.

Figure 9 is a sectional view of the matrix with the proof sheet in position to offset the design thereupon on the back of the matrix.

Figure 10 is a sectional view of the matrix after the same has been etched on both sides.

Figure 11 is a sectional view of the printing plate with the matrix placed against the back thereof.

Throughout the specification and claims the terms "etch" and "etched" will be employed to describe the method or process of treating the faces of the matrix, but it is to be understood that these terms are not to be considered as terms of limitation, but are to be construed broadly to include not only etching but to cover any other process of a similar nature, and any other method of treating the surfaces of the matrix for forming thereon elevations and depressions in the illustration or design produced thereupon.

In carrying this improved method into operation a relief plate or electrotype plate

is employed having upon its front a picture or reproduction produced in any manner or by any process, certain portions of which design or reproduction constituting "high lights" or portions to be printed light and other portions which constitute what is technically known as "solids" and which solids are to be printed heavier or darker than the "high light" portions.

In the drawings the numeral 15 designates a printing plate such as an electrotype or other suitable plate having produced upon its face in any ordinary and well known manner the design or pattern 16, from which reproductions are to be made. This design or pattern consists of portions 17 technically known as "solids" and which portions are to be printed heavier than other portions 18, technically known as "high lights," it being understood that in the drawings the various figures are illustrated on an exaggerated scale.

This improved method consists in first producing a matrix 19, the obverse face of which is illustrated in Figure 3, and the reverse face is illustrated in Figure 7, the completed matrix being illustrated in Figure 10.

This improved matrix may be formed from any material suitable for the purpose but is preferably constructed of sheet material such as zinc, copper, or the like.

The first step in the operation consists in "pulling" a proof upon the matrix sheet 19 from the face of the printing plate 15, which may be done in the usual manner of producing a proof, that is by an impression of the design on the printing plate upon the matrix, resulting in the production of the design illustrated generally by the reference numeral 20 on the face of the matrix. Another proof is then taken or "pulled" from the face of the printing plate 15 upon another sheet of material 21, which latter may be of celluloid or any suitable material from which the design 22 produced thereupon by impression of the printing plate, may be readily transferred. The sheet 21 is then placed against the back of the matrix sheet 19, as shown in Figure 9, so that the design 22 will register with the design 20 on the face of the matrix plate 19, and which design is offset in any suitable manner upon the reverse face of the matrix plate 19 to produce the design 23. This production of the design 23 on the reverse face of the matrix registers with the design 20 on the obverse face of the matrix. In Figure 8 the designs 20 and 23 are indicated by the solid lines.

After the sheet 21 has been removed, the matrix 19 is etched upon both faces thereof so as to form elevations 24 and depressions 25 on both faces of the matrix, the elevations 24 corresponding with the solids on the face of the printing plate and the depressions 25 corresponding with the "high light" portion or portions on the printing plate which are to print lighter than the solids.

By etching the matrix on both faces thereof the portions of the matrix for displacing the printing plate for producing the solids will be substantially twice the thickness of the remaining portions of the matrix corresponding to the high light portions of the printing plate, with the result that when pressure is exerted upon the matrix to shape the printing surface, the solids will project for a considerable distance above the high light portions and these parts will be clearly defined when the impression is made by the printing surface of the plate, after having been so treated. This result cannot be obtained when the matrix is etched on one side only as the matrix is too thin to permit it to be etched enough to produce such a result.

The matrix thus prepared is then placed against the back or the reverse face of the printing plate 15 so that the depressions 25 will register with the "high light" portions 18 of the printing plate and the elevations 24 will register with the solid portions 17 of the printing plate 15.

What is claimed as new is:—

1. The method of producing a matrix for use in the treatment of a printing plate which consists in printing from a printing plate the design thereon upon the surface of a metallic sheet, then from the printing plate and upon another sheet of material pulling another copy of the design, then placing the proof face of the second sheet against the back of the metallic sheet so that the design on the proof face will register with the design on the obverse face of the metallic plate, then causing the design on the second sheet to offset on the back of the metallic sheet, and then etching both faces of the metallic sheet.

2. The method of producing a matrix for use in the treatment of a printing plate which consists in printing from a printing plate the design thereon upon the surface of a metallic sheet, then upon a sheet of celluloid or similar material pulling another copy of the design from the printing plate, then offsetting the printed design from the celluloid sheet upon the back of the metallic sheet so that the designs on both surfaces of the metallic sheet will register, and then etching both surfaces of the metallic sheet.

In testimony whereof I have signed my name to this specification, on this 26th day of December, A. D. 1922.

HENRY A. HERR.