

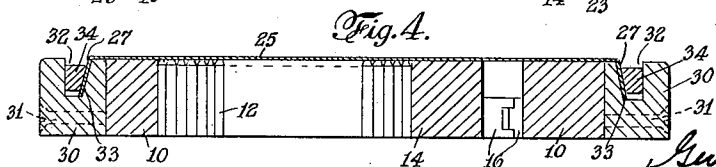
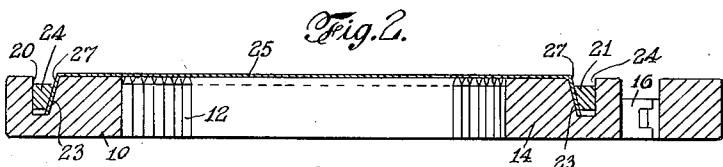
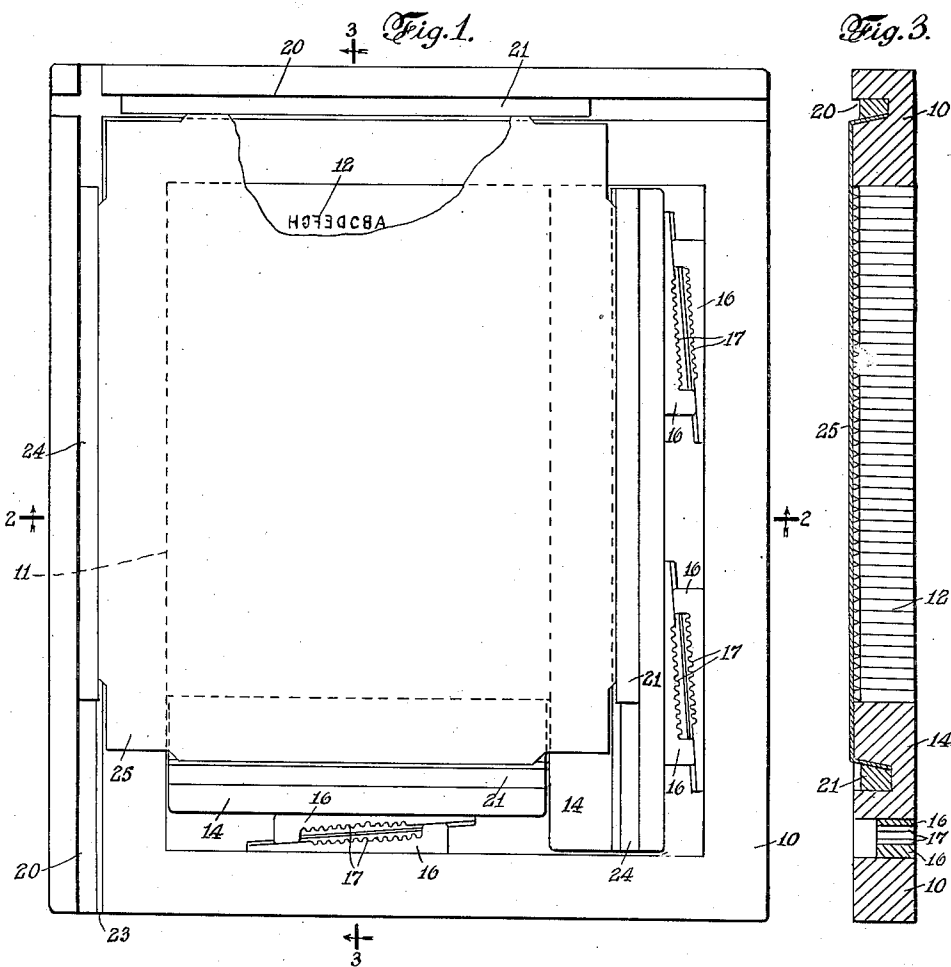
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PRINTING CHASE

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PRINTING CHASE

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This invention relates to the art of printing, and more particularly to a matrix for use in the casting of stereotype plates and to a method and apparatus for making the same.

5 In the preparation of matrices for stereotype plates it is common practice to set up the type, half-tone cuts or other designs to be printed, in a chase, making the printing faces as nearly level and uniform as possible. The chase with the
10 type, cuts or the like, locked therein constitutes a form. The matrix paper, preferably moist, is placed over the printing faces of the form, is backed by soft material, such as blotting paper, felt, etc. and pressure is applied to impress the
15 printing faces therein. During this process moisture is absorbed from the matrix by the blotting paper and the printing faces are caused to emboss the back of the matrix to a certain extent.

When matrices thus formed are placed in a casting box and used for casting stereotype
20 plates, the resulting plates contain defects and irregularities in their printing faces which render them unsuitable for high quality printing. I have found that these defects are caused by the matrix itself. Due to the soft backing in the
25 matrix press, certain printing faces emboss the back of the matrix to a greater extent than others. The fine, sharp type characters may cut far into the matrix, whereas the large, half-tone cuts compress the matrix paper without great
30 penetration, except at the edges of the cuts, where a substantial impress may be obtained. In general, the type faces emboss the matrix by various amounts and the larger cuts form panels in the
35 back of the matrix higher than the embossed parts produced by the type faces. Also, hard or soft spots in the matrix paper cause irregularities in the back of the matrix, such as waves, or local elevations or depressions.

40 When the back of such a matrix is placed against the smooth surface of a casting box and a stereotype plate is cast, the pressure of the molten metal causes the back of the matrix to become uniform and transfers all irregularities to the face of the matrix so that they appear in
45 the plate itself as differences in elevation of the corresponding parts of the printing faces.

This becomes particularly serious in the case of half-tone cuts which consist of minute dots,
50 all of which must be accurately printed. Any unevenness in the printing face may cause black or white spots on the picture. Also, the extra penetration of the matrix at the edges of the cuts may cause corresponding elevations in the stereo-
55 type plate, giving the effect of a dark marginal

line around the printed picture. If type is located adjacent the cuts, any difference in elevation of the cuts and the type will cause defective reproduction.

It is an object of the present invention to eliminate imperfections of the type above referred to in cast stereotype plates.

Another object is to provide a matrix of such form that the printing faces of the form are accurately reproduced on the stereotype plate.

Another object is to improve the quality of stereotype plates so as to make the same available for high quality printing.

Another object is to reduce the cost of high quality printing plates so as to render them available for general use.

Another object is to provide a matrix from which high quality stereotype plates may be cast.

Still another object is to provide an improved chase on which the matrix may be formed.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

In accordance with the present invention the correct printing surface of the stereotype plate is obtained by making the matrix in such form that the face thereof is not distorted by the pressure of the type metal during the casting operation. For this purpose the matrix is treated, as for example, by grinding the back surface there-
30 of, so as to cause the embossed portions opposite the various impressions to lie in substantially the same plane. If the printing faces of the form are of uniform height, the matrix is preferably reduced to a substantially uniform thickness
35 with respect to the various printing faces. I prefer to do this before removing the matrix from the form because, if the matrix is once removed, the registration of the printing face with the impressions in the matrix is lost and cannot be
40 accurately restored.

The form holds the impressions in the matrix in register with the printing faces so that the back of the matrix may be ground to eliminate all irregularities and to provide supporting
45 surfaces adapted to engage the smooth surface of the casting box and hold the matrix in proper position to reproduce said printing faces on the stereotype plate.

The present invention accordingly provides 50 means associated with the chase by which the matrix is secured thereto while the back of the matrix is being treated to produce the desired supporting surfaces.

The invention further consists in the various 55

novel features hereinafter more fully described and more particularly set forth in the claims.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages and the manner of its operation may be better understood by referring to the following description taken in connection with the following drawing forming a part thereof, in the various figures of which like reference characters have been used to denote like parts.

In the drawing, Figure 1 is a plan view of the chase showing the matrix locked in position thereon;

Figure 2 is a section taken on the line 2—2 of Figure 1;

Figure 3 is a section taken on the line 3—3 of Figure 1; and

Figure 4 is a broken section similar to Figure 2, but illustrating a different embodiment of the invention.

In the following description and in the claims various details will be identified by specific names for convenience, but they are intended to be as generic in their application as the art will permit.

Referring more particularly to the embodiment of the invention illustrated in the drawing, Figure 1 shows a chase comprising a frame 10 having an inner aperture 11 adapted to receive the type, half-tone cuts or the like, illustrated for convenience as type 12. The type 12 is clamped in the frame 10 by floating bearers 14 engaging two adjacent sides of the type and clamping the same securely against the opposite sides of the frame 10. For exerting the necessary pressure on the bearers 14, sets of lock-up quoins 15 are provided having racks 17 adapted to be engaged by suitable tightening keys (not shown) by which relative lateral movement of the quoins 15 is effected. The parts of the chase thus far described are well known in the art and are accordingly not set forth in further detail.

In accordance with the present invention, a pair of grooves 20 are formed in the top surface of adjacent sides of the frame 10 opposite the floating bearers 14. Similar grooves 21 are formed in said floating bearers 14. Each of the grooves 20 and 21 may be provided with a sloping surface 23, preferably on the side adjacent the type 12, which is adapted to engage a wedge-shaped locking bar 24.

In operation, the type 12 is first set and locked in the chase by suitably positioning the floating bearers 14 and tightening the quoins 15 in the manner well known in the art. Thereafter, a matrix paper 25 having side flaps 27, is positioned over the type, the side flaps 27 are bent downwardly over the sloping surfaces 23 into the grooves 20 and 21, and the locking bars 24 are inserted in said grooves 20 and 21 and are caused to securely lock the matrix paper 25 in position. The downward pressure of the locking bars 24 serves to stretch the matrix and to cause the same to lie evenly over the type. The locking bars 24 are of a size such that they leave a space both at the top and bottom of the grooves 20 and 21. The space at the top prevents pressure from being exerted on the bars 24 in the matrix press, and the space at the bottom permits a tool to be passed under the bars for purposes of removal.

Obviously, the grooves 21 may be formed in the frame 10 instead of in the floating bearers 14, if desired, provided the matrix is made accordingly.

In the embodiment of the invention illustrated

in Figure 4, the frame 10 and the floating bearers 14 are of standard construction and the type is locked therein in the usual manner. An outer frame 30, however, is provided which entirely surrounds the frame 10 and may be secured thereto, as by screws 31. This frame 30 is provided with grooves 32 in the upper surface thereof, which grooves are similar in form to the grooves 20 and 21 above mentioned and may have sloping sides 33. In this form of the invention the matrix paper 25 extends completely over the frame 10 and the flaps 27 enter the grooves 32 and are held therein by locking bars 34 similar to the locking bars 24 above described. This form of the invention may be used in instances where it is desirable to employ a standard chase and render the carrying out of the invention possible with a minimum number of replacement parts.

In preparing the matrix for the casting of stereotype plates, the chase with the matrix locked in position thereon in the manner above described is placed in a suitable press, is backed by soft material, and pressure is applied for impressing the printing face of the form into the matrix paper. During this process the printing faces emboss the back of the matrix by varying amounts to produce the irregularities above mentioned.

The form is then removed from the matrix press with the matrix still locked in position thereon and held against the printing faces so as to retain registration therewith. The larger depressions in the back of the matrix may be filled in, as by pasting strips of paper therein, and the back of the matrix is then ground or cut to a thickness such that the backs of the embossed portions opposite the printing faces lie in substantially the same plane, preferably in a plane parallel to the printing faces, in which case the matrix is reduced to a uniform thickness opposite the various printing faces. This step may be effected by passing the form, with the matrix still locked thereon, under a suitable grinding or planing device while guiding the same so as to obtain a matrix of uniform thickness with respect to the printing face of the form. It is, of course, necessary to use a sufficiently thick matrix paper so that the desired supporting surfaces may be obtained without causing the type to completely penetrate the matrix. During the grinding and after removal of the form from the press, the matrix may be held firmly against the form, if necessary, to prevent loss of registration therewith. Obviously, any variations in the original printing faces are reproduced by the impressions in the matrix, and the matrix would not be of uniform thickness opposite such impressions. For ease of description, it is assumed that the original printing faces are uniform since that is the preferred condition, and the specification and claims are to be interpreted accordingly.

After the matrix has been prepared in the above manner, it is released from the form by removing the locking bars 24, is suitably trimmed, and is then thoroughly dried to remove any residual moisture. It is then placed in the casting box for the casting of the stereotype plates. The smooth surface of the casting box engages the various supporting surfaces of the back of the matrix and holds the face of the matrix in proper position for casting while pressure is being exerted thereon by the molten type metal.

Since the back supporting surfaces are adapted to engage the surface of the casting box, the

matrix is securely held opposite the various type impressions and opposite the entire area of each cut or the like so that the printing faces are all accurately reproduced. The face of the resulting stereotype plate is smooth and uniform and is adapted for use without further treatment or correction. Stereotype plates of a quality comparable to that of electrotype plates and suitable for quality printing, such as magazines and the like, have been produced in this way without requiring further correction and without substantial increase in cost over those produced from standard stereotype methods.

It is to be understood that in the above process the press in which the matrix is formed and the casting machine in which the stereotype plate is cast may be of any standard construction and form no part of the present invention. Furthermore, any suitable cutting or grinding mechanism may be employed, or the cutting or grinding operation may be carried out manually, as may be desired. It is to be understood that the matrix is equally suitable for the casting of flat stereotype plates or for the casting of curved plates, such as those used in rotary printing presses.

Certain embodiments of the invention have been disclosed for purposes of illustration only but the invention is not to be limited thereto. It is only to be limited in accordance with the following claims when interpreted in view of the prior art.

I claim:

1. A printing chase comprising a frame having means to engage and clamp printing elements, said chase having means associated therewith to engage and tension a paper matrix to cause the same to lie evenly over the printing elements.

2. A printing chase comprising a frame having means to engage and clamp printing elements, said frame having longitudinal grooves formed in the face thereof adapted to receive the edges of a paper matrix, and means for gripping said edges to tension the matrix and for securing said edges in position in said grooves.

3. A printing chase comprising a frame having means to engage and clamp printing elements, said frame having longitudinal grooves formed in the face thereof adapted to receive the edges of a paper matrix, and wedge means for securing said edges in position in said grooves and for tensioning the matrix.

4. A printing chase comprising a frame having floating bearers therein adapted to engage and clamp printing elements, said floating bearers and the sides of said frame opposite thereto having longitudinal grooves formed therein adapted to receive edges of a paper matrix, and wedge locking bars in said grooves for locking the edges of said matrix therein and for tensioning the matrix.

5. In combination, a printing form including a chase, a paper matrix extending over said form, and means associated with said chase for tensioning and securing said matrix in position whereby said chase and said matrix may be removed together for permitting operations to be performed on the back of said matrix.

6. In combination, a printing form including a chase, a paper matrix extending over said form and having side flaps, and means engaging said flaps to tension the matrix and hold the same in position on said chase, whereby said chase and said matrix may be removed together for per-

mitting operations to be performed on the back of said matrix.

7. In combination, a chase, a frame surrounding said chase, a paper matrix extending over said chase, and means engaging the edges of said matrix to tension the matrix and secure the same to said frame.

8. A printing chase comprising a frame and bearers adapted to engage printing elements and means associated with said chase on opposite sides of said printing elements to engage and stretch a matrix paper and to clamp the same substantially around the entire periphery thereof.

9. A printing chase comprising a frame and bearers adapted to engage printing elements and means associated with said chase to clamp and hold a matrix under tension, said clamping means extending substantially around the entire periphery of the matrix.

10. A printing chase comprising a frame and bearers adapted to engage printing elements, said chase having wedge-shaped grooves in the upper surface thereof extending substantially around the printing area and corresponding locking bars adapted to seat in said grooves to engage the edges of a matrix paper to tension the matrix paper and secure the same to said chase.

11. In combination, a printing chase comprising a frame and bearers adapted to engage printing elements, said bearers having a longitudinal wedge-shaped groove in their upper surface adapted to receive the edges of a matrix, and wedge-shaped locking bars adapted to seat in said grooves to grip said edges to tension the matrix and secure the same to said chase.

12. A printing chase comprising a frame, longitudinal wedge-shaped grooves in the upper surface of said frame extending on at least two sides thereof and adapted to receive the edges of a matrix, and means to grip the edges to tension the matrix and secure the same to said chase.

13. A bearer for a printing chase, said bearer having a longitudinal wedge-shaped groove in the upper surface thereof, said groove being adapted to receive the edge of a matrix, and means to grip said edge to tension the matrix and secure the same in position.

14. A printing chase comprising a frame having bearers adapted to engage printing elements, said chase having wedge-shaped grooves in the upper surface thereof extending substantially around the printing area, and corresponding locking bars adapted to seat in said grooves to engage the edges of a matrix paper, the sides of said grooves sloping towards the printing area so that the insertion of the locking bars pulls the edges of the matrix paper into the grooves and holds the matrix paper under tension.

15. A printing chase comprising a frame having bearers adapted to engage printing elements, said chase having wedge-shaped grooves in the upper surface thereof extending substantially around the printing area, and corresponding locking bars adapted to seat in said grooves to engage the edges of a matrix paper, the sides of said grooves sloping towards the printing area so that the insertion of the locking bars pulls the edges of the matrix paper into the grooves and holds the matrix paper under tension, the upper surface of the locking bars being depressed below the surface of the chase so that the locking bars are not engaged by the matrix press.

16. A printing chase comprising a frame having bearers adapted to engage printing elements, said chase having wedge-shaped grooves in the

upper surface thereof extending substantially around the printing area, and corresponding locking bars adapted to seat in said grooves to engage the edges of a matrix paper, the sides of said
5 grooves sloping towards the printing area so that the insertion of the locking bars pulls the edges

of the matrix paper into the grooves and holds the matrix paper under tension, said locking bars being of a dimension such that a space is provided above and below said grooves for the purpose specified.

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