

No. 854,457.

PATENTED MAY 21, 1907.

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MATRIX MAKING MASTER BLOCK.

APPLICATION FILED MAY 18, 1905.

Fig. 1.

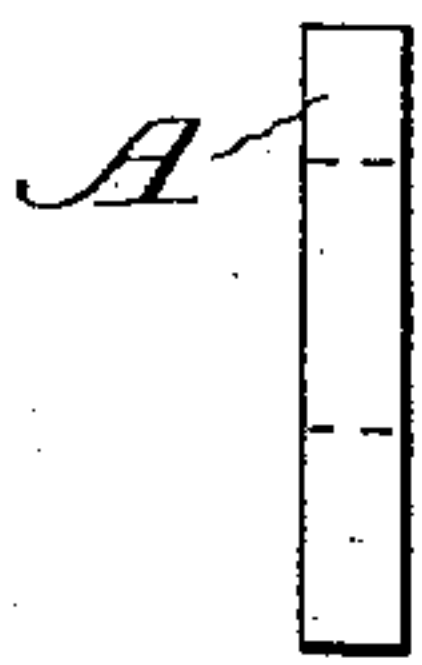


Fig. 2.

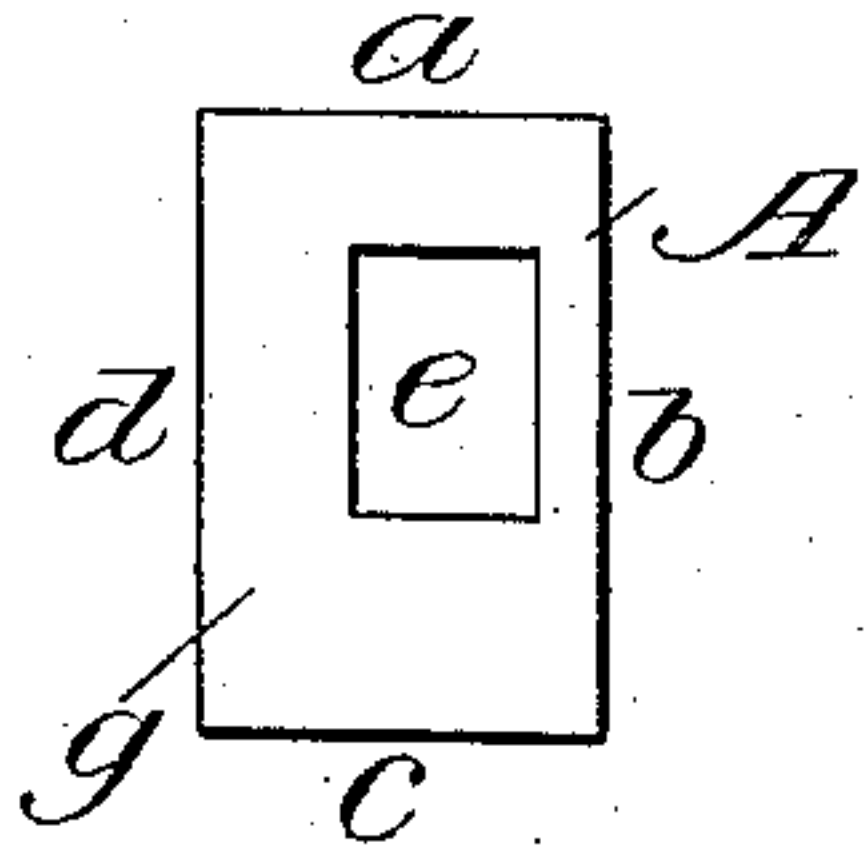


Fig. 3.

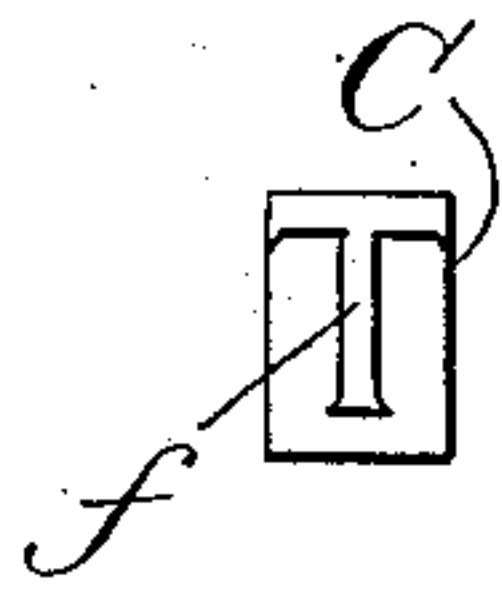


Fig. 4.

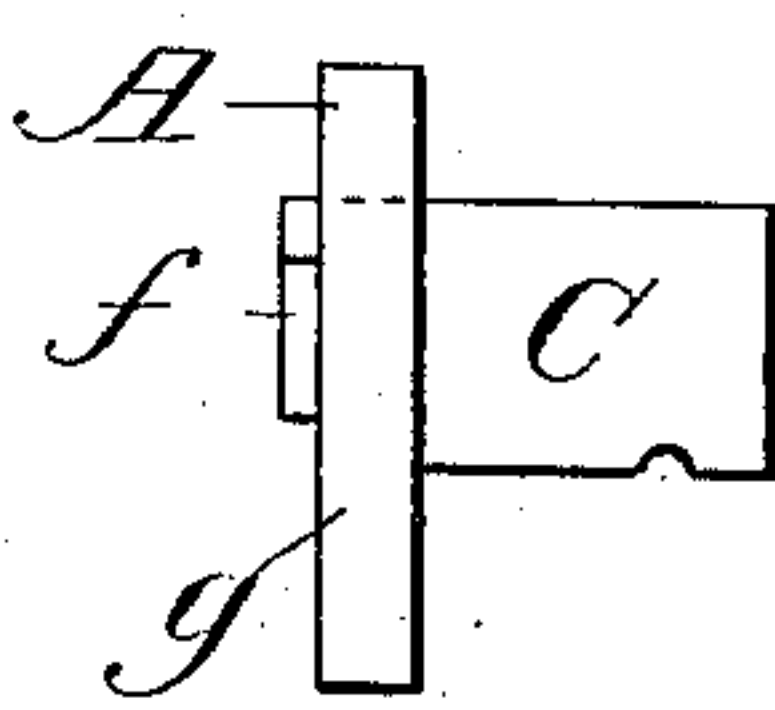


Fig. 5.



Fig. 6.

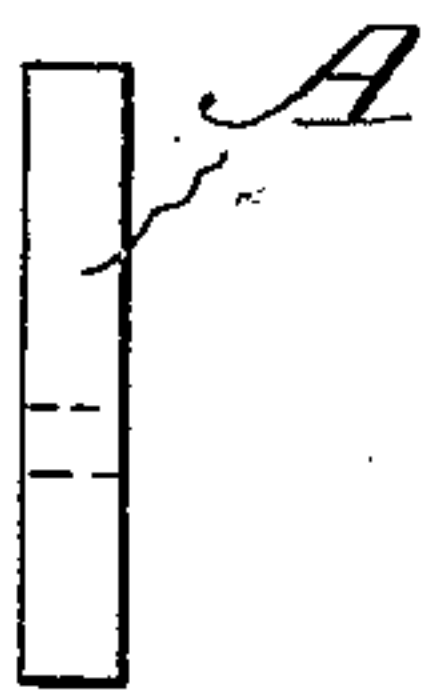


Fig. 7.

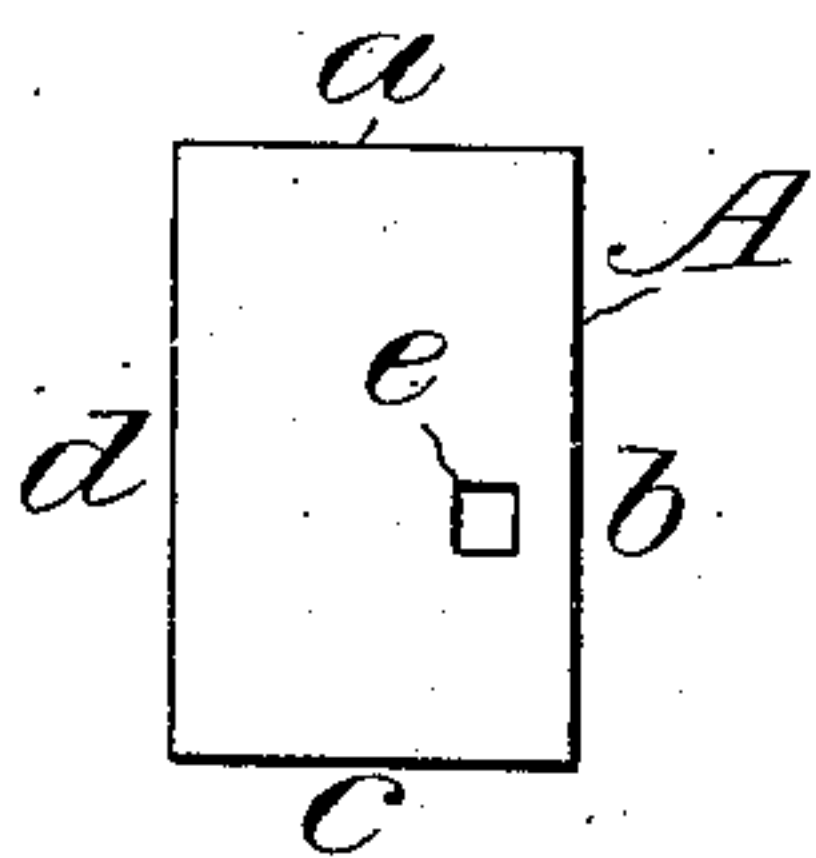


Fig. 8.



Fig. 9.

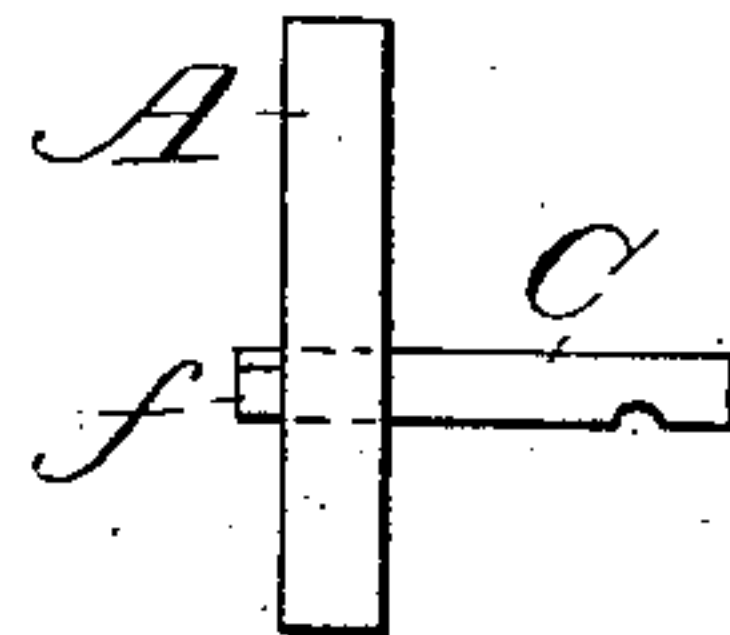


Fig. 10.



Fig. 11.

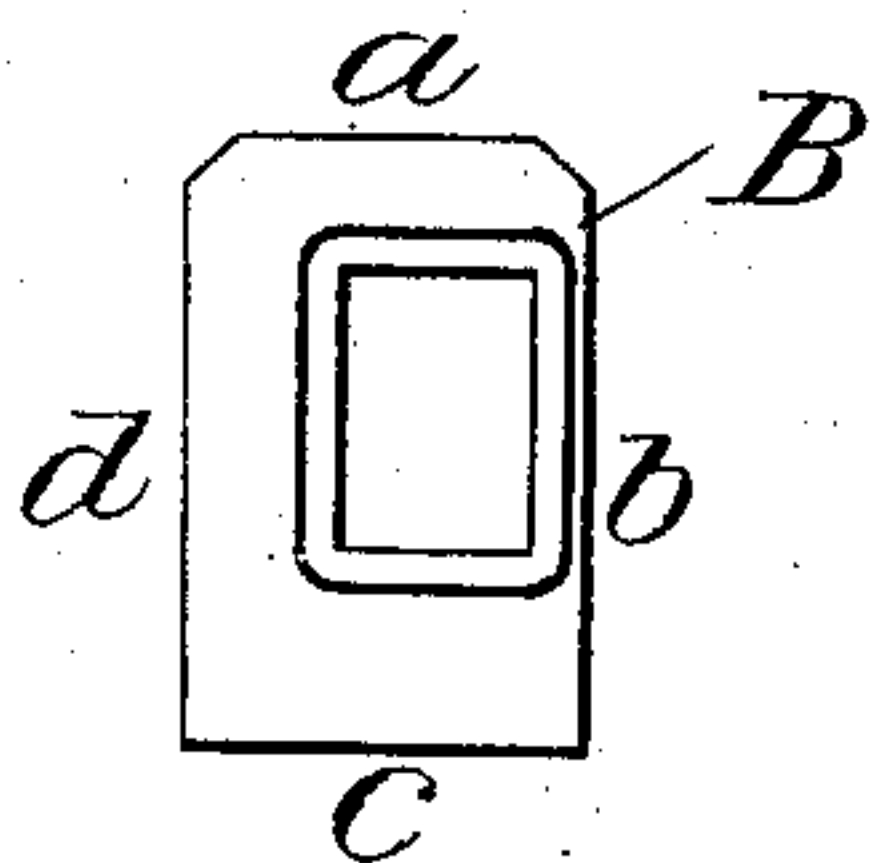


Fig. 12.

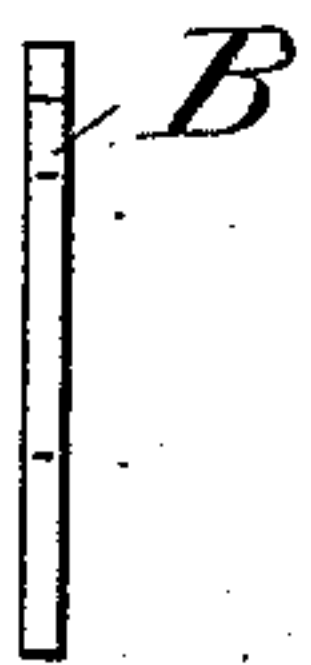


Fig. 13.

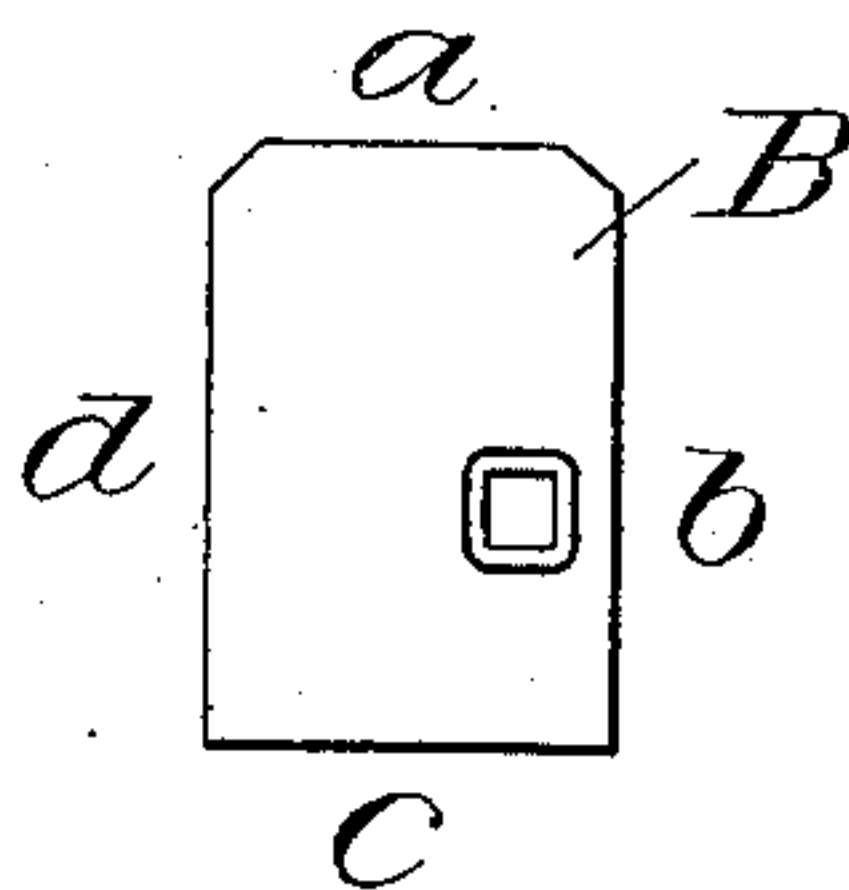
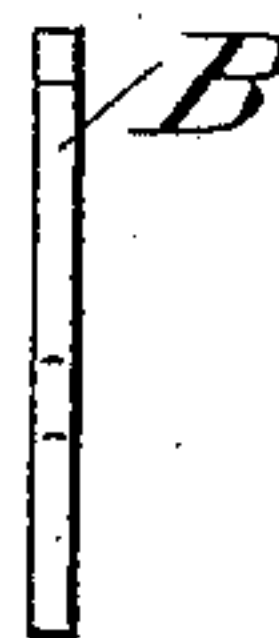


Fig. 14.



Witnesses

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# UNITED STATES PATENT OFFICE.

FRANK H. BROWN AND JOHN E. HANRAHAN, OF BALTIMORE, AND GEORGE A. BOYDEN, OF MOUNT WASHINGTON, MARYLAND, ASSIGNORS TO NATIONAL COMPOSITE TYPE COMPANY, OF BALTIMORE, MARYLAND, A CORPORATION OF DELAWARE.

## MATRIX-MAKING MASTER-BLOCK.

No. 854,457.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed May 18, 1905. Serial No. 261,034.

*To all whom it may concern:*

Be it known that we, FRANK H. BROWN and JOHN E. HANRAHAN, of Baltimore city, and GEORGE A. BOYDEN, of Mount Washington, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Matrix-Making Master-Blocks; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to matrix making, and has for its object the production of a master block containing a type character correctly located in relation to certain surfaces of the said block. The type character of said block is reproduced in intaglio and correctly and accurately located in a matrix plate by metallic or other deposition.

With the introduction of the "sorts machine for casting type," invented by these same inventors, the art of producing type at this time is being revolutionized, for the reason that instead of making type under the present foundry practice with skilled labor, and then distributing the type throughout the country for printers to use, the printers are now producing type in their offices with unskilled labor, resulting in a great saving of time and money, and affording convenience in producing immediately sorts and type when needed. This innovation necessitated the creation of various systems and inventions not only in type-casting machines proper, but in molds, mold making, matrices and matrix making, and to one of these systems this invention relates.

Owing to the systems employed in type making under foundry practices one font of matrices of any given size or style of type was sufficient to meet all the demands of a foundry for type of such size or style. However, with the introduction of the "sorts machine for casting type" the conditions of type making thereby required numerous fonts of matrices of the same face, as each printing office having its own casting machine must necessarily each have one font of matrices for each face used. Therefore, under the new conditions thousands of fonts of

matrices of different faces are required, and a necessity for producing means by which matrices can be made cheaply and accurately as well as interchangeably.

Heretofore the matter of producing matrices consisted in using a preparatory frame or holder in which a series of matrix plates, having holes therein, were laid and arranged comparatively in alinement. In each of these holes was inserted one or two thicknesses of lead, or other metal, which determined the depth, or drive of the type character. On top of the matrix plates, extending across the plates, was arranged a strip of metal, and against the face of this strip was placed a type of the desired face to be reproduced in the matrix, the face of such type projecting into the holes in the plates and resting upon said pieces of metal inserted therein. Between the type, resting against the strip, was inserted pieces of metal to space or locate the type with approximate correctness in the holes of the matrix plates set-wise, and against the whole another strip of metal was placed, holding the letters approximately in their relative positions with respect to the holes in the matrix plate. This whole combination was then waxed to secure them together, and the matrix plate with the type and fixtures were removed from the said preparatory frame. The faces of the matrix plates are then waxed, except at such places where deposition was to take place, and then the whole was suspended in a battery where deposition took place. After this was completed these matrix plates were removed from the type and fixtures holding same, the surplus deposit on the back removed and a backing plate riveted to the matrix plate to reinforce the matrix plate and deposition. This riveting of the plates together often caused a distortion of the matrix plate and deposition therein. The crude matrices were then given to skilled fitters who reduced all the matrices to a uniform depth of face, and also to the line and set-wise dimensions between the character and gaging surfaces of the matrices, all of which required great care, skill, exactness and time of experienced and expensive workmen.

In order to overcome the above and pro-



duce means by which interchangeable matrices can be made cheaply and accurately the present invention is devised.

In the accompanying drawing:—Figure 1 is an edge view of a master block, without the type character. Fig. 2 is a face view of Fig. 1. Fig. 3 is a face view of the type character. Fig. 4 is an edge view of the block with the type character inserted with the face and foot of the type projecting therefrom. Fig. 5 is an edge view of the matrix block, with the type character secured therein with the foot end of the type removed and the face end ready to receive the matrix plates. Figs. 6, 7, 8, 9 and 10 are similar views of the foregoing, but with smaller type inserted. Fig. 11 is a front view of a matrix plate having a hole cut therein and into which the type character on the master block fits and is inserted. Fig. 12 is an edge view of Fig. 11. Figs. 13 and 14 are similar views to Figs. 11 and 12, but arranged to receive smaller size type.

The master blocks A are provided with four gaging surfaces, *a*, *b*, *c* and *d*, and also a gaging surface *g* having a hole *e* therein of the exact size of the type body to be reproduced. The position of this hole is accurately located with relation to two or more of the four surfaces *a*, *b*, *c* and *d* and to a predetermined distance with respect to the same. In this hole is inserted a type body C with its character *f* projecting beyond the gaging surface *g*, of a sufficient distance to give the desired depth, or drive of face to that character when reproduced. In this position the type C is securely and permanently fixed to the master block A, and the projecting foot end of the type body cut off and finished flush with the back of the master block, as shown in Fig. 5. This master block, it will be perceived, has four gaging surfaces *a*, *b*, *c* and *d*, and also a gaging surface *g*, the latter of which determines the depth or drive of the type character. What is said of the matrix block, Figs. 1, 2, 3, 4 and 5, is also applicable to Fig. 6, 7, 8, 9 and 10, the difference being that instead of large type small type is represented. However, it will be observed that the distance between gaging surfaces *b* and the type character and gaging surface *c* and said type character, are the same in both cases, and these two distances are always maintained irrespective of size or kind of type throughout the whole system employed in making matrices by the methods herein involved. Therefore, in making matrices from these master blocks, as heretofore explained, the type characters are properly positioned on all matrix plates, and can be cast by standard mold mechanism without any skilled adjustment. To produce matrix plates from these master blocks a desired master block A is selected, and a matrix plate, Fig. 11, with its hole therein of suit-

able size for the character to be cast, is placed in position over the character on the block with respect to the four edges of the plate, *a*, *b*, *c* and *d* of the master block, and in which position the matrix plate is secured to the master block in any suitable manner, usually by tipping the same with solder at two points. After the plates have thus been secured they are then waxed and ready for deposition.

By the above plan and arrangement of master blocks and matrix plates it will be observed that all of the numerous details heretofore used in preparing matrix plates, from ordinary type, for deposition are dispensed with, and no skilled labor is required in adjusting the said plates to the type characters either in regard to lateral measurements or drive. Furthermore, absolute accuracy is obtained between the type character and the matrix plate, without measuring or fitting, whereby after deposition takes place all that is necessary to be done is to remove plate B from block A by breaking the tipping of solder, and then removing the surplus deposition on the back of the matrix plate. From these master blocks a large number of matrices can be made at a nominal cost and of such absolute precision that any number of matrices can be used with standard mold mechanism, thus making it possible to supply matrices as demanded by the printers and required by the conditions of the sorts machine.

It will be understood that by "master block" I mean a block of any preferred material having a character thereon which block is used to reproduce said character in a matrix by any suitable process or in any preferred manner.

Having described our invention, what we claim and desire to secure under United States Letters Patent is:—

1. A master block for making matrices comprising a block of one predetermined size irrespective of the size or style of the character to be used therewith, and a type character secured to said block in such position that the meeting point of two of the boundary lines of the type character, irrespective of its size or style, is at a predetermined fixed point on the master block.

2. A master block for making matrices comprising a block provided with predetermined gaging surfaces and having an opening therein, a plurality of the walls of said opening being arranged in definite relation with respect to said gaging surfaces.

3. A master block for making matrices comprising a block provided with predetermined gaging surfaces and having an opening therein, a plurality of the walls of said opening being arranged in definite relation with respect to said gaging surfaces, and a type character located in said opening.

4. A master block for making matrices



comprising a block provided with predetermined gaging surfaces and having an opening therein, a plurality of the walls of said opening being arranged in definite relation with respect to said gaging surfaces, and a type character located in said opening and projecting a predetermined distance from the face of said block.

5 5. A master block for making matrices comprising a block provided with gaging surfaces and having an opening therein arranged in definite relation with respect to said gaging surfaces.

10 6. A master block for making matrices comprising a block provided with an opening formed therein at a predetermined distance from the edges thereof, whereby the opening is always in the same position, irrespective of the size of the same.

15 20 7. A master block for making matrices comprising a block provided with an opening conforming in shape to the contour of said

block, said opening being located at a predetermined distance from the edges of said plate, whereby the opening is always in the same position irrespective of the size thereof. 25

8. A master block for making matrices comprising a rectangular block provided with a correspondingly shaped opening, two walls of said opening being located at predetermined distances from the contiguous edges of the block, whereby the opening is always in the same position irrespective of the size thereof. 30

In testimony whereof, we have signed this specification in the presence of two subscribing witnesses. 35

FRANK H. BROWN.  
JOHN E. HANRAHAN.  
GEORGE A. BOYDEN.

Witnesses:

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