

(No Model.)

A. F. ALLEN.
TYPE FOUNDER'S MATRIX.

No. 449,062.

Patented Mar. 24, 1891.

Fig. 1.

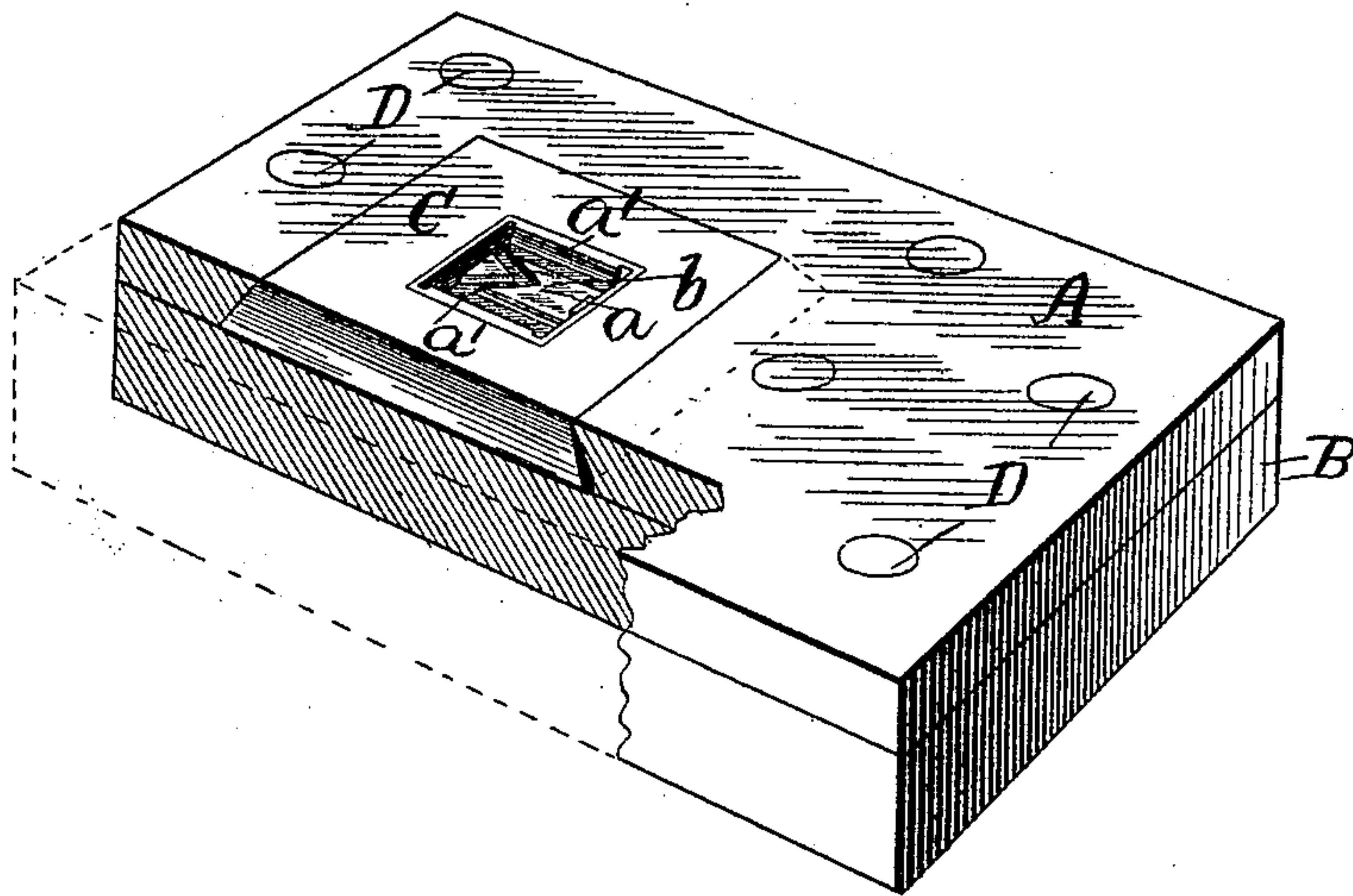
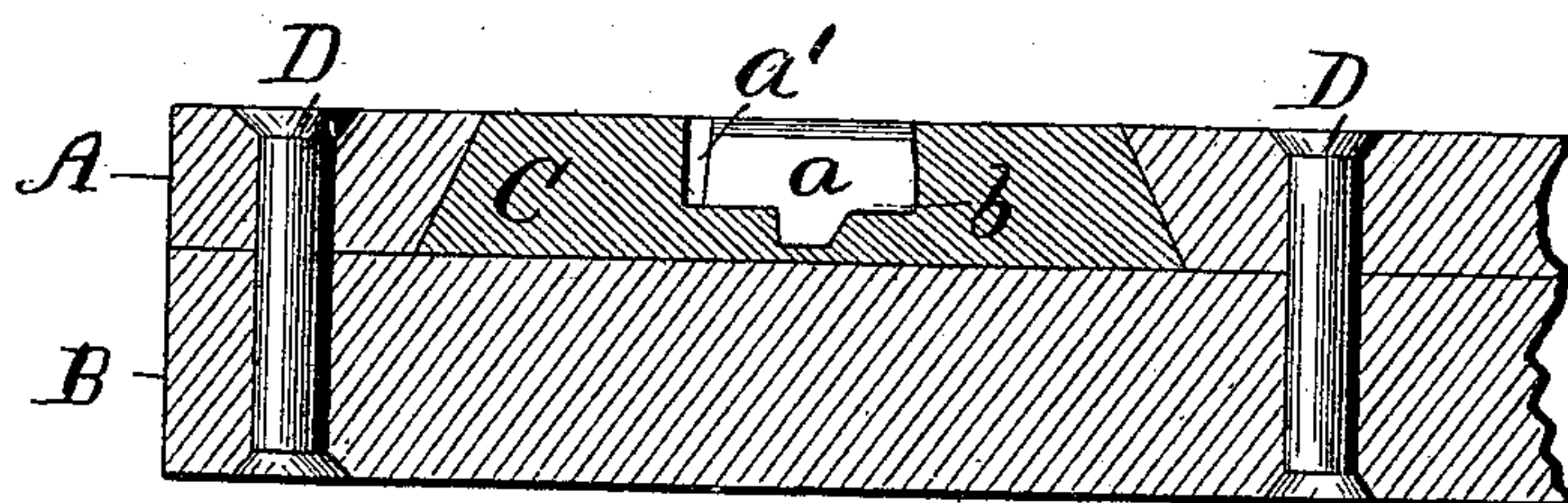


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALBERT F. ALLEN, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO CHARLES E. WALKER AND JOHN WEST, BOTH OF SAME PLACE.

TYPE-FOUNDER'S MATRIX.

SPECIFICATION forming part of Letters Patent No. 449,062, dated March 24, 1891.

Application filed March 20, 1890. Serial No. 344,621. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. ALLEN, 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 Type-Founders' Matrices, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to the construction of matrices used by type-founders in casting type, and has for its object, first, to increase the durability or life of the matrix; second, to prevent the destruction of the matrix by reason of the pulling out of the counters and face thereof; third, to provide a matrix that will allow the use of a lighter, tougher, harder, and consequently a much more durable metal in casting type; fourth, to provide a matrix of such a nature as to prevent the metal from sticking to the faces thereof, and thus produce sharper lines and faces on the type, and finally to produce a matrix having the casting-surface with which the molten type-metal comes in direct contact much harder than the surrounding part, whereby not only all of the advantages are gained that are enumerated, but the additional advantage of casting type without forming the usual uneven surfaces on the body thereof, thus dispensing with the necessity of "hand rubbing."

One of the usual methods and practices followed in the construction and preparation of matrices for casting type is that of first producing a pattern type or punch, which is done by cutting it to the exact form by hand out of soft steel, and then hardening and tempering the punch and driving it into a piece of solid copper, which is afterward fitted and forms the matrix.

Another way of forming the matrix is that of cutting a pattern by hand from a metal composition consisting of tin, lead, and antimony. This pattern is then placed in a depositing-vat connected with an electric battery and the copper-casting portion of the matrix (intaglio part) deposited thereon by means of an electric current.

Various other methods have been practiced

from time to time in preparing type-casting matrices; but the state of the art is so well known and understood that a detailed description of each particular method followed is unnecessary here, it being sufficient to say that the casting portion of the matrix has been composed of soft metal, and therefore not obviating the objectionable features attending such construction. A matrix of soft metal is usually short-lived, and is incapable of enduring any considerable use without great wear, there being present the constant liability of the burning and pulling out of the counters and faces and of the matrix being destroyed long before it is really worn out.

The object, therefore, of this invention in general is to provide a matrix that will remedy the defects and overcome the objections noted; and to this end I will now proceed to give a detailed description of the essential features of my improvement.

Figure 1 is a view in perspective of a type-casting matrix, a part being broken away, showing the construction features, and Fig. 2 a broken-away vertical longitudinal section of the same.

Referring to the drawings, A represents the top plate, and B the back plate, which comprise the usual form of constructing the ordinary matrix.

The plates are both composed of brass, the top plate being first recessed or routed out and the hard piece of steel C fitted therein. This piece of steel forms the casting portion of the matrix and has the letter formed therein, as shown. The two plates are then secured together by means of the rivets D in the usual manner. In the views given the casting portion consists of the recessed interior *a*, with which the molten metal comes in contact.

a' indicates the counter, or that part of the matrix around the outlines of the letter. The face *b* of the matrix is the bottom line of the recess *a* and forms the face or printing-surface of the type. By this arrangement not only is the life of the matrix greatly lengthened, but a lighter metal may be used that will fuse at a higher temperature than the type-metal commonly used, thus producing a type of a corresponding hardness and of a

much more durable and lasting character and of a lighter weight. The harder the type the longer it may be used before the lines of the face become worn and heavy.

5 It will be readily observed that the employment of a matrix having the casting part of steel or its equivalent and much harder than the surrounding metal of the inclosing plates possesses many advantages, and especially so when casting large type, as the steel
10 casting-surface is capable of withstanding the excessive heat of the large mass of molten metal it must continuously come in contact with. It readily permits the casting of large
15 characters and intricate designs with the same facility as the smaller type, which is not possible with the ordinary copper matrix. It is also well known that it is a very difficult matter and often a practical impossibility to

produce large matrices of solid copper by driving from steel punches.

The method of forming the letter or other character in the steel casting part of the matrix may in the future form the subject-matter of another application.

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

A type-founder's matrix consisting of the recessed top plate of soft metal, a hard casting-surface embedded in said recessed plate and forming the matrix proper, and the back plate rigidly secured to the top or matrix plate, substantially as described.

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