

No. 854,456.

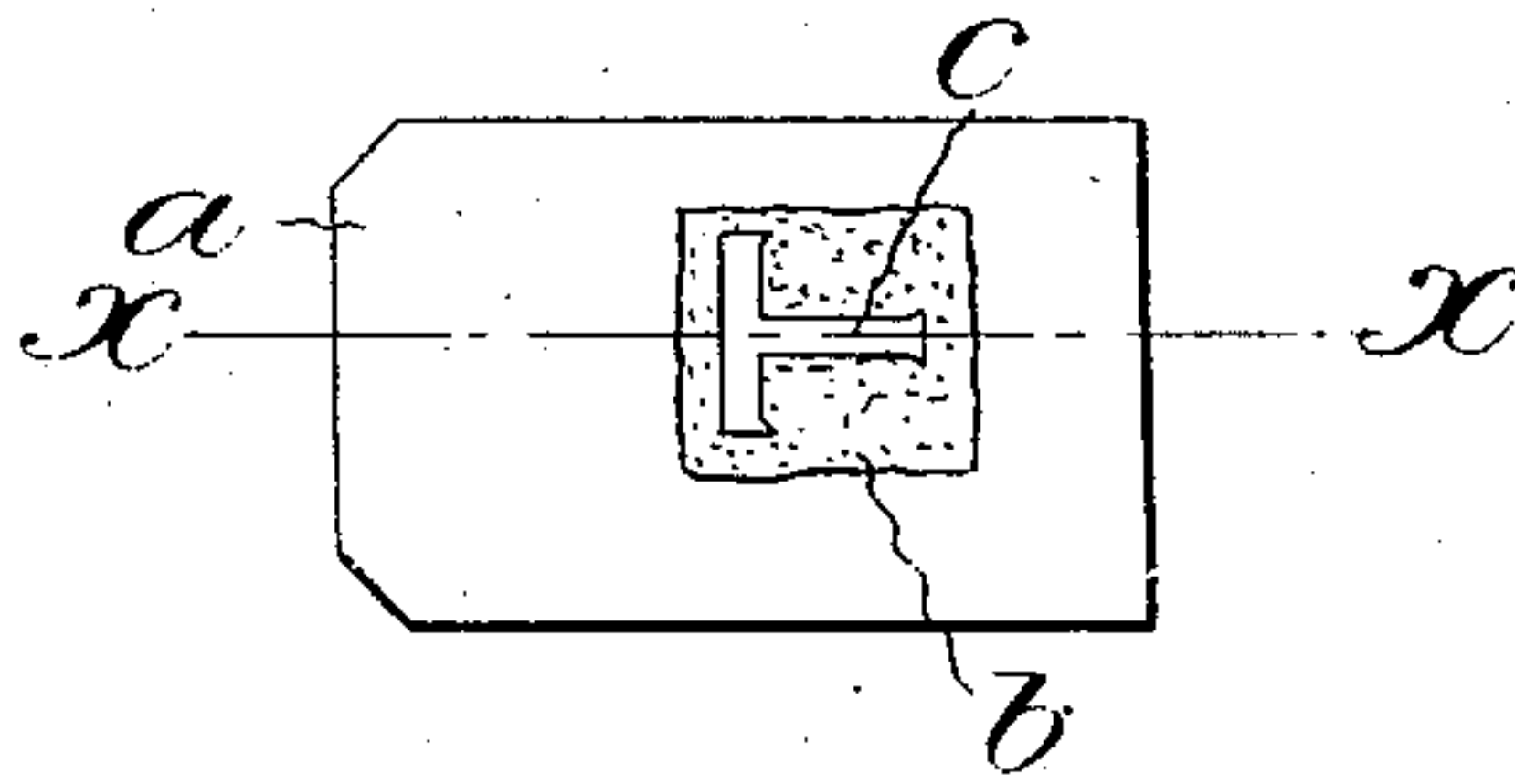
PATENTED MAY 21, 1907.

F. H. BROWN, J. E. HANRAHAN & G. A. BOYDEN.

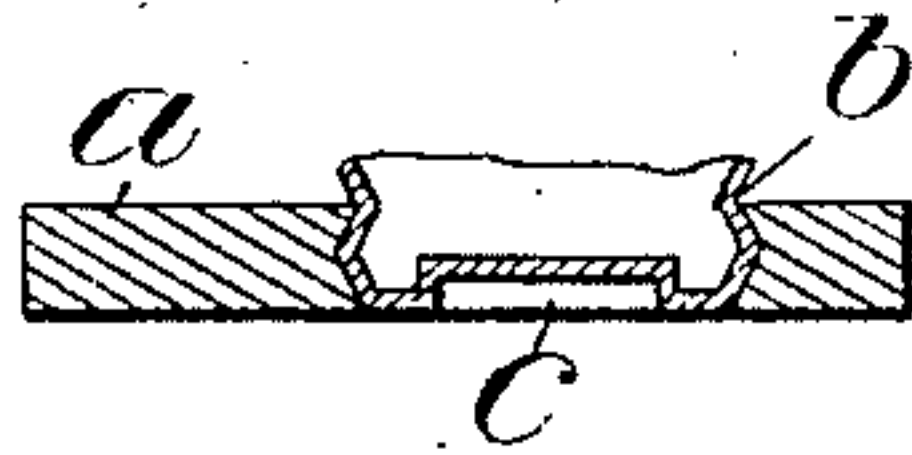
METHOD OF PRODUCING MATRICES.

APPLICATION FILED MAY 18, 1905.

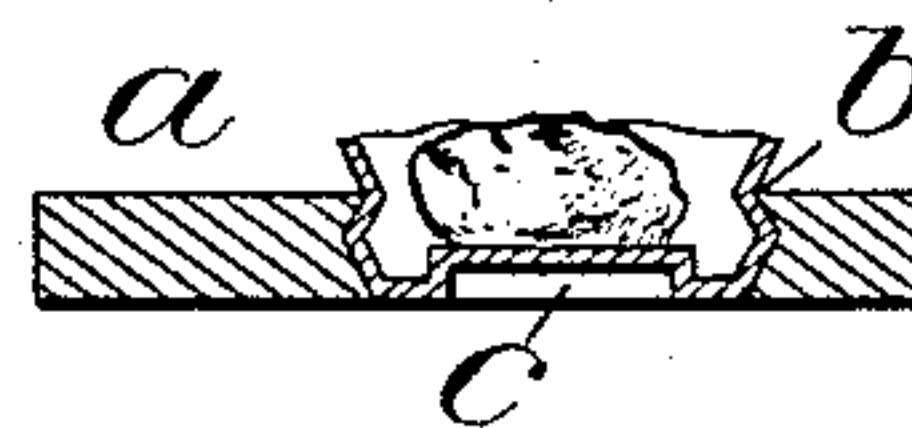
*Fig. 1.*



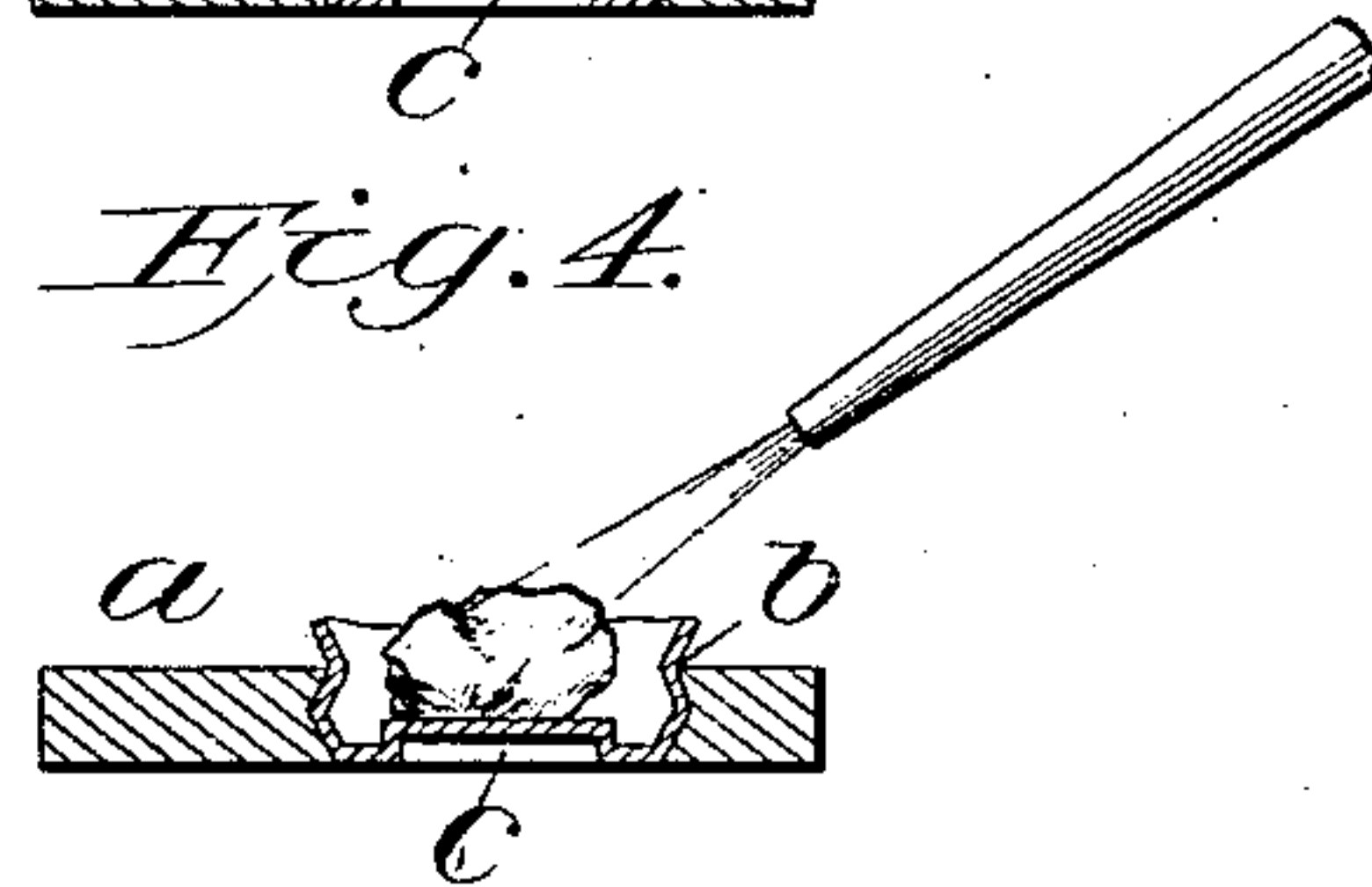
*Fig. 2.*



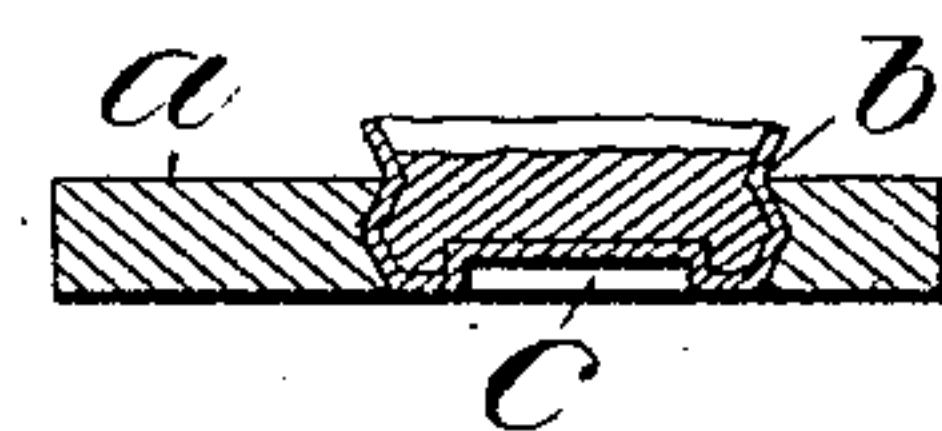
*Fig. 3.*



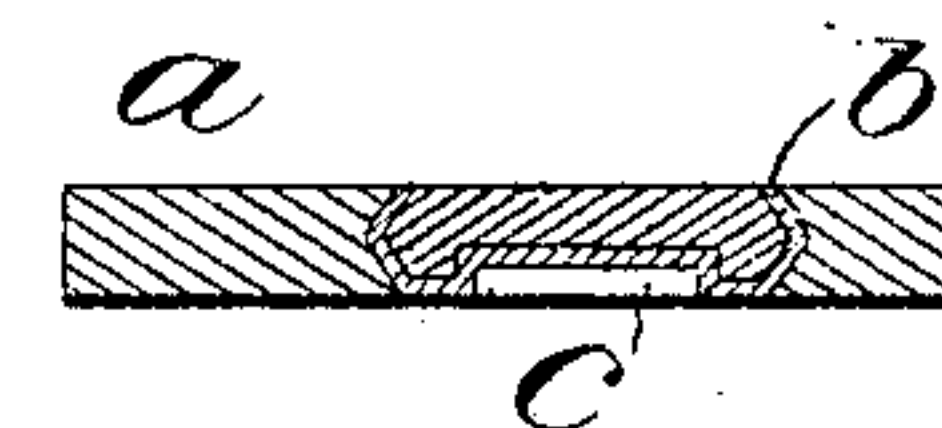
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



WITNESSES:

*C. Walker.*

*Lewis Hodges*

INVENTORS

*Frank H. Brown,*  
*John E. Hanrahan,*  
*George A. Boyden*

BY

*Wm. S. Hodges*  
*Attorney*

# UNITED STATES PATENT OFFICE.

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

## METHOD OF PRODUCING MATRICES.

No. 854,456.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed May 18, 1905. Serial No. 261,033.

*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 Methods of Producing Matrices; 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, the object of which is to provide a method for thoroughly filling in or backing up the deposition forming the type character in the matrix plate.

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. This results in a great saving of time and money and affords convenience in procuring immediately type and sorts when desired. This invention necessitated the creation of various systems and inventions, not only with relation to the type casting machine proper, but also in molds, mold making, matrices and matrix making, and to one of these systems the present invention relates.

In the accompanying drawing:—Figure 1 illustrates a front view of the casting surface of a type matrix, showing the brass plate *a*, the electro deposition *b* and the character *c*. Fig. 2 is a section of Fig. 1 on line X, showing the hollow shell of the deposition after the same has been removed from the battery. Fig. 3 is a similar view of Fig. 2 with a piece of filling metal laid in position ready to be fused. Fig. 4 is a similar view to the preceding ones with a flame from a blow pipe acting on the filling metal. Fig. 5 is a similar view with the metal fused and melted down, thoroughly filling all crevices in the shell. Fig. 6 is a similar view with the excess deposition

and the excess filling metal finished off flush with the back of the matrix.

The general practice heretofore in creating the deposition forming the type character of matrices has been to keep a matrix plate in the battery until sufficient deposition took place to entirely fill the hole in the matrix plate. However, this took considerable time, which is an important element where matrices have to be made rapidly and economically to fill large and numerous orders. By this invention, the matrix plate is only subjected to the deposition process long enough to form a fairly thick shell thereof, after which it is removed from the battery, and in the cavity of the shell so formed a piece of metal of a lower fusing temperature than that of the deposition is placed. This is then subjected to the flame of a blow pipe which thoroughly and quickly melts the inserted softer metal and thoroughly unites the latter with the deposition. By this method the delicate shell formed by the deposition is in no manner damaged or destroyed. At the same time it thoroughly fills up all the crevices in the shell, making the whole a comparatively solid mass, by which as efficient matrices are made as though the whole deposition were solid, but in considerably less time and at reduced cost. This method is exceptionally valuable where a large number of matrices is to be made at reduced cost in order to bring the latter within a non-prohibitive price so that printers can afford to purchase large numbers of matrices to be used in connection with the said "sorts machine."

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

1. The method of producing matrices consisting in subjecting a matrix plate having an opening therein, to electrical deposition to form a thin, relatively deep shell spanning said opening, and finally fusing a backing of metal in said shell by means of heat driven directly down upon the shell and backing metal.

2. The method of producing matrices consisting in subjecting a matrix plate having an opening therein, to electrical deposition to



form a thin, relatively deep shell spanning  
said opening, then fusing a backing of metal  
in said shell by means of heat driven directly  
down upon the shell and backing metal, and  
5 finally completing the matrix by dressing off  
said backing and the edges of said shell flush  
with the back of said plate.

In testimony whereof, we have signed this

specification in the presence of two subscri-  
ing witnesses.

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

Witnesses:

ELDRIDGE E. HENDERSON,  
C. WALTER GWINN.