

(No Model.)

F. A. JOHNSON.
MATRIX MATERIAL.

No. 478,333.

Patented July 5, 1892.

Fig. 1

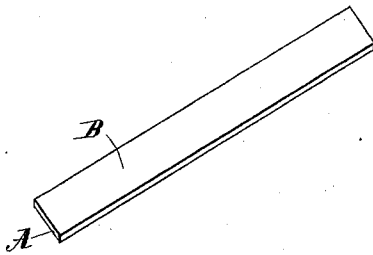


Fig. 3.

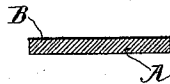


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

FRANK AMOS JOHNSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
TACHYTYPE MANUFACTURING COMPANY, OF SAME PLACE.

MATRIX MATERIAL.

SPECIFICATION forming part of Letters Patent No. 478,333, dated July 5, 1892.

Application filed March 14, 1892. Serial No. 424,750. (No specimens.)

To all whom it may concern:

Be it known that I, FRANK AMOS JOHNSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Matrix Material; and I 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.

My invention has for its object to provide a matrix material capable of permitting a perfect matrix to be made therein by the impression of single dies one after the other in succession, and which is also capable of permitting a perfect cast to be taken therefrom, so as to produce a perfect stereotype-bar or linotype.

The invention was designed for use on the class of machines described in my former patent, No. 463,388, of date November 17, 1891, entitled "matrix-making and stereotyping machine." In this class of machines, as is well known, the impressions are produced by single dies brought in succession to the printing-point and separately impressed into the matrix material. Much difficulty has been experienced in finding a material in which a perfect matrix might be made in this manner. Prior to my present invention, however, I had found that such a matrix could be produced from single dies by using a soft metal—such as lead—for the matrix material. I also found, as the result of my experience, that a good cast could be taken from a lead matrix provided the molten metal was at exactly the right temperature. If, however, the metal happened to be too hot, the lead would be to some extent fused by the cast and the type-metal would stick to the lead when the mold was being separated from the matrix, producing more or less imperfections on the printing-surfaces of the linotype. Now it is a very difficult thing to keep the molten metal always at substantially the same temperature. It is easy to keep it hot enough; but it is apt to get too hot. Hence to remove these limitations I surface the soft metal body with a plating

or deposit of some metal having a higher degree of fusibility. I have found that by using a strip of soft lead and facing the same with a surfacing of copper applied by the well-known process of electroplating a matrix material is obtained which will answer all conditions. The surfacing of copper enables the production of what is practically a copper-lined matrix. The copper coating is carried in with the dies when making the impressions. The copper is of higher fusibility than of the lead. Hence when the cast is taken the lead or matrix material will not be fused, so that the walls of the matrix remain intact, the linotype will not stick to the matrix when separating the mold therefrom, and the printing-surfaces of the stereotype-bar will be clean, smooth, and sharply defined. Supposing the matrix to have been a perfect one, which can be invariably secured by supporting the matrix material on the form of holder shown, described, and claimed in my former patent, a linotype may be produced therefrom even if the molten metal be considerably superheated. No especial care, therefore, need be taken as to the exact temperature of the molten metal. The linotype produced from this matrix material will print with all the sharpness and distinctness of hand-set type. In fact the printed impression has the appearance of having been made from an electroplate.

Referring to the drawings, Figure 1 is a perspective view representing a strip of my matrix material in full size. Fig. 2 is a plan view of a matrix; and Fig. 3 is a cross-section, on an enlarged scale, of the matrix-strip shown in Fig. 1.

A is the body of soft lead, and B the surfacing of copper on the face of the lead. The copper surfacing, as represented in the drawings, is greatly exaggerated. A very thin or light coat will answer. All that is necessary is that the face of the lead should be perfectly covered by the surfacing of copper.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A matrix material consisting of a body

of soft metal having on its face a surfacing
of metal of higher fusibility, substantially as
and for the purpose set forth.

2. A matrix material consisting of a body
5 of lead having on its face a surfacing of cop-
per, substantially as and for the purpose set
forth.

In testimony whereof I affix my signature in
presence of two witnesses.

FRANK AMOS JOHNSON.

Witnesses:

JAS. F. WILLIAMSON,
EMMA F. ELMORE.