

(No Model.)

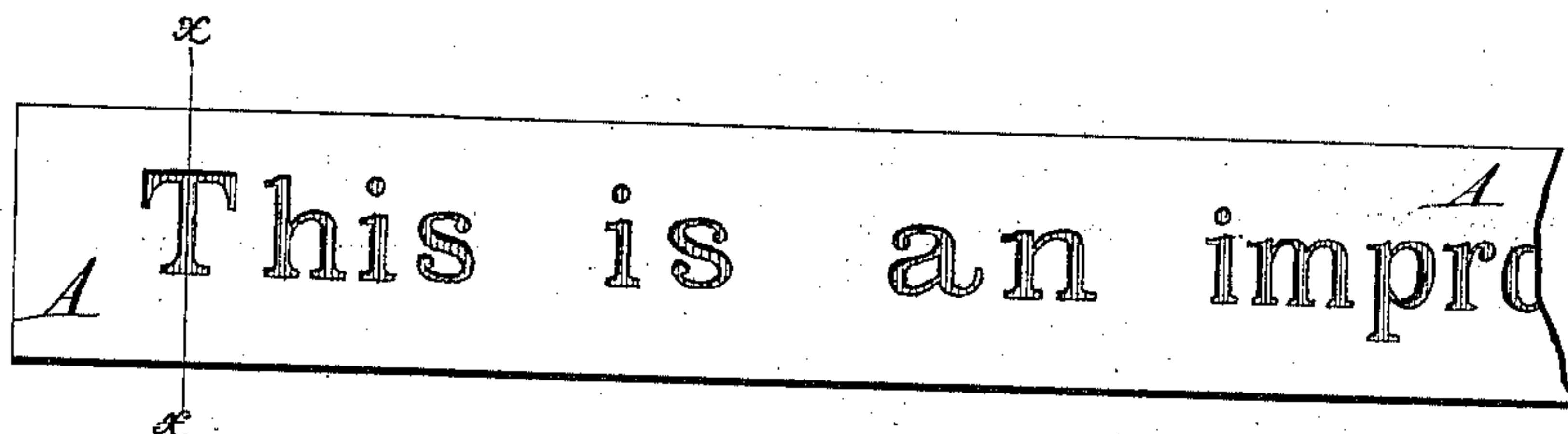
J. O. CLEPHANE.

MEANS FOR PRODUCING PRINTING SURFACES.

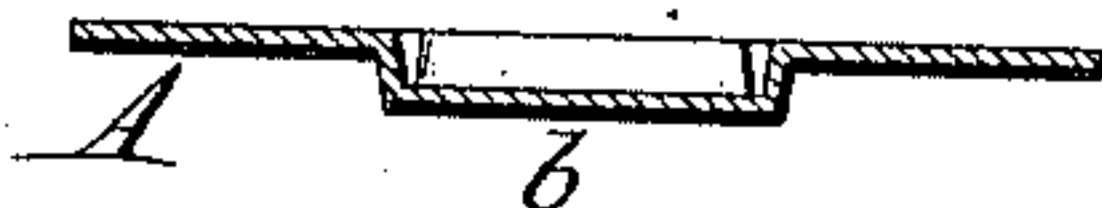
No. 311,414.

Patented Jan. 27, 1885.

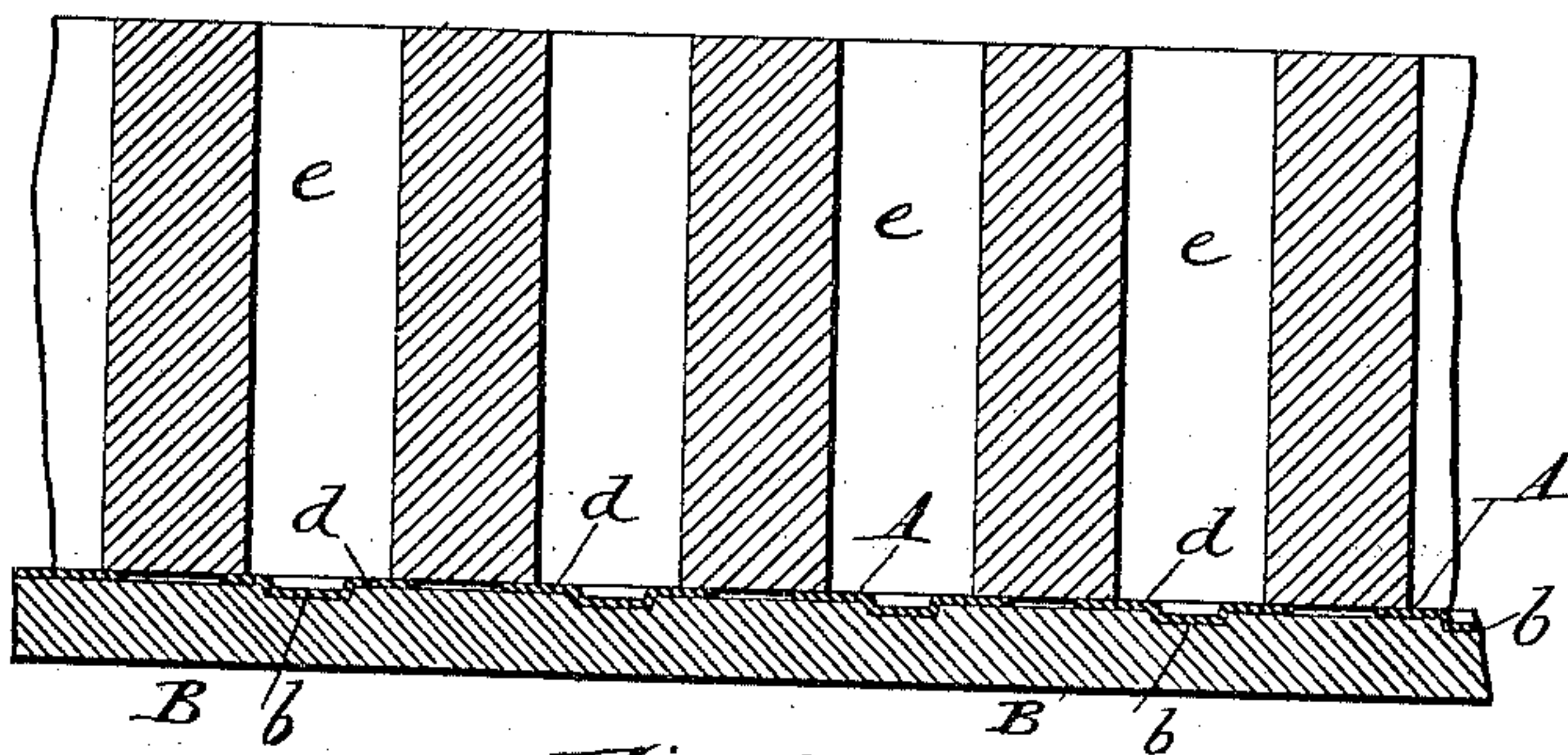
*Fig. 1*



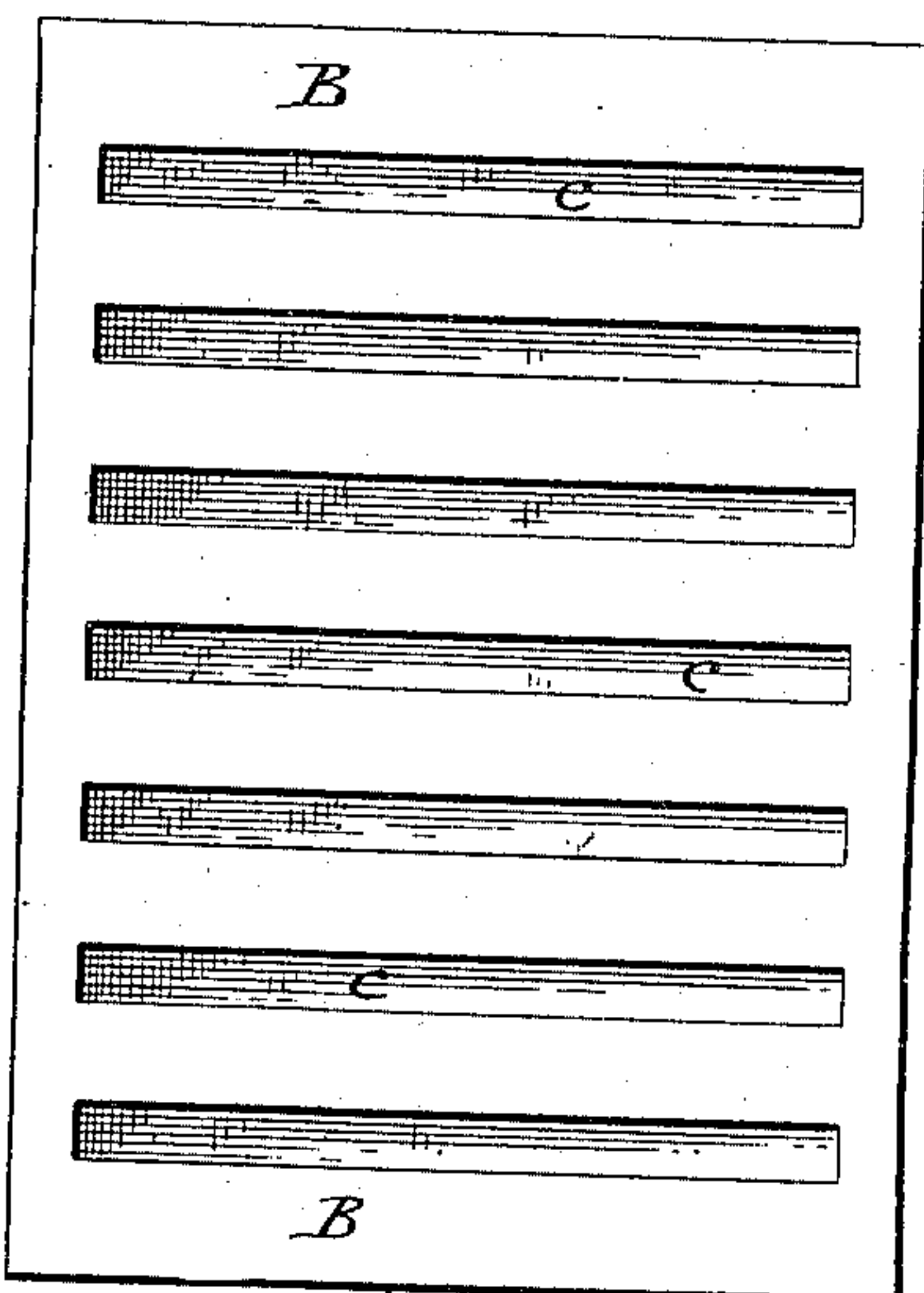
*Fig. 2.*  
on  $x-x$



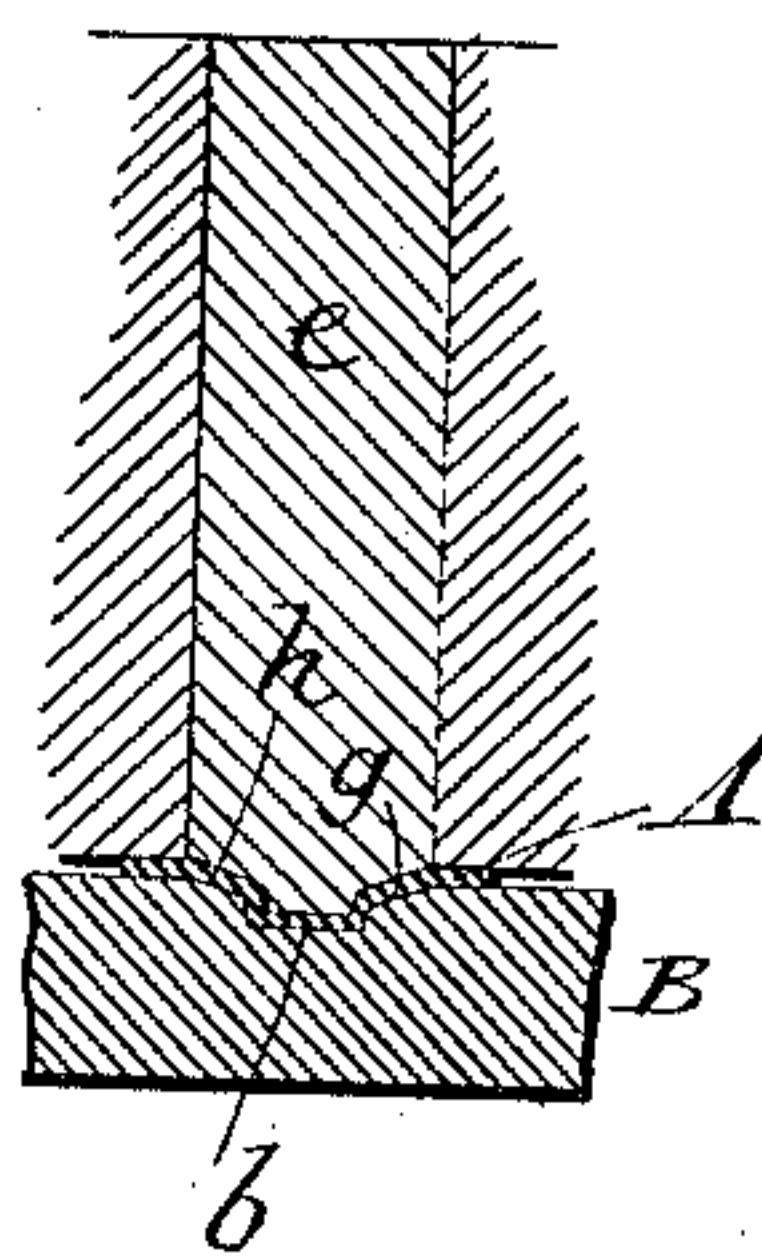
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



*Attest.*

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*By his Attorney,*  
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# UNITED STATES PATENT OFFICE.

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## MEANS FOR PRODUCING PRINTING-SURFACES.

SPECIFICATION forming part of Letters Patent No. 311,414, dated January 27, 1885.

Application filed August 11, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES O. CLEPHANE, of Washington, in the District of Columbia, have invented certain Improvements in Means for  
5 Producing Printing-Surfaces, of which the following is a specification.

This invention has reference to that system of producing relief-surfaces for letter-press printing which consists in indenting the characters mechanically and successively in a matrix strip or sheet from which the cast is taken.

My invention has reference to a matrix strip or sheet composed of foil or thin metal, or equivalent thin material, in which the characters are stamped up from the front, so as to stand in relief on the back. When this thin material is employed in connection with a plastic, yielding, or elastic support at the back, the characters may be impressed therein easily, and of a sharp and perfect form. The material rising or flowing outward on the back during the indenting operation permits the type to enter under a light pressure, and as the material is not compressed or condensed  
25 the matrices retain their form after the withdrawal of the type therefrom.

Owing to the elevation of the characters on the back of the matrix, it is unsuitable for use with the ordinary mold-beds having flat surfaces. I therefore provide a mold-bed containing grooves or channels to admit the lines of raised characters when the matrix-sheet is placed thereon, but adapted to give firm support to the marginal edges of the matrix when the mold-frame is placed thereon, as herein-  
35 after explained.

Referring to the accompanying drawings, Figure 1 represents a face view, on an enlarged scale, of the matrix-strip, of copper-foil or  
40 equivalent thin metal. Fig. 2 represents a cross-section of the same on the line *xx*. Fig. 3 is a cross-section of the mold frame or bed having one of the matrix-strips and the mold-frame applied in connection therewith. Fig. 4 is a top plan view of the mold-frame. Fig. 5 is a sectional view of the frame in a slightly-modified form.

Referring to the drawings, A represents the matrix-strip, in which the characters are  
50 formed by means of metallic type applied thereto with suitable pressure. The indenta-

tion of the characters successively in the order in which they are to occur in the strip may be secured in any suitable manner, a convenient and successful mechanism for the purpose being that represented in the applications of Ottmar Mergenthaler, filed on the 18th day of December, 1878, and Charles Moore, filed on the 19th day of June, 1879. In practice it is found, as stated, that the indentation of the characters into one face of the foil causes the latter to be projected or raised upon the back in a corresponding manner, as represented at *b*, Fig. 1. In order to admit of this strip being properly supported at its edges, and of its being practically used in connection with a casting frame or mold, I provide a mold frame or bed, B, provided with a series of transverse grooves or channels, *c*, each of suitable width, and adapted to admit the elevated portions on the back of the matrix-strip, the edges of the strip meanwhile projecting beyond the edges of the channel and receiving a solid support upon the face or surface of the plate, as shown at *d*.

In making use of the mold-frame the matrix-strips are arranged in parallel lines therein, in the manner indicated, the characters being suitably arranged or justified, the matrix-strips being either connected or disconnected, as preferred. After the matrix-strips are in position I apply above them a mold of any suitable character provided with channels, openings, or cavities, *e*, of suitable size and form to produce printing bars or plates, these openings or channels being arranged, of course, to register with or stand opposite to the characters in the matrix.

The operation of casting the bars and the appliances to that end may be of the character fully detailed in the application of J. H. White, filed on the 13th day of March, 1883, No. 88,048, or of any other suitable character, with the exception of the peculiarities herein named.

The channels *c* in the mold plate or frame may be of such size as to closely embrace the raised portions of the matrix-strip; or they may be made of increased width and beveled downward at their marginal edges, as shown at *g*, Fig. 5.

In practice it is found that the impression



of the characters in the matrix-strip has a certain tendency to depress the entire central portion of the strip adjacent to the characters, and by chamfering the edges of the channels, as in Fig. 5, this depression is permitted to remain. In consequence of this the resulting printing-bar is produced, as shown in Fig. 5, with shoulders or edges *h* inclining backward or downward from the characters. These retreating edges are of advantage in that they prevent the possibility of ink being received upon the bars outside of the character, so as to be transferred to the paper.

While I have described and illustrated the matrix as consisting of independent strips each having a single line of characters therein, the invention applies as well to a matrix consisting of a single sheet with a number of lines therein.

The present invention is restricted to those matters and things which are hereinafter specifically claimed, and all other matters which may be incidentally described or shown are foreign to the present invention. It will of course be understood that in the formation of the matrix herein described the letters will appear in regular and proper form and order when viewed from the front—that is to say, in the order in which they are read—and that they are raised on the back of the strip in reverse order, or, as it is commonly designated, in a “negative form.”

I am aware that reading-matter for the blind

has been prepared by raising the characters on the front of the sheet in a positive manner, and to such sheets I lay no claim. They are manifestly not adapted to serve the purpose of matrices to produce printing-surfaces, for the reason that they are raised on the front of the sheet instead of on the back. They have hollow or concave faces presenting the character in an order which is not admissible in a matrix.

Having thus described my invention, what I claim is—

1. As a means of producing printing-bars, the combination of a grooved bed plate or support and a metallic or other matrix-strip having indented characters seated in the grooved portions of the plate, and having its edges sustained upon the face of said plate.

2. The bed-plate provided with grooves or channels, combined with the matrix having characters formed in relief on its back, and seated in its grooves, and the slotted mold-frame seated on the edges of the matrix outside of the grooves.

3. The mold having the transverse grooves *c*, with chamfered edges *g*, in combination with a matrix-strip of corresponding form, as set forth.

JAS. O. CLEPHANE.

Witnesses:

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