



# UNITED STATES PATENT OFFICE.

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## MATRIX FOR CASTING TYPE.

SPECIFICATION forming part of Letters Patent No. 732,395, dated June 30, 1903.

Application filed October 17, 1902. Serial No. 127,666. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS CLEGHORN, linotype-operating instructor, of No. 18 Coram street, London, England, have invented certain new and useful Improvements in Matrices for Casting Type; 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.

This invention relates to improvements in matrices for casting bars of type in the manner adopted in linotype and other such like machines.

The principal object of my invention is to facilitate the production of printed matter of a tabular character such as requires the impression of vertical lines dividing the printed matter into vertical columns, as in a railway time-table, for example; but the invention may be modified or extended so as to enable letters and other characters, words, or entire lines of words to be underlined without requiring the separate insertion of short or long rules between the lines of cast type.

For the purpose of producing columns of printed matter with interposed vertical lines I cause the several matrices of a font to be engraved with the characters standing at right angles to the direction in which they are ordinarily placed in the matrices of a linotype-machine, and by the side of the character a groove is engraved extending across the thickness of a matrix. When the several matrices thus engraved have been assembled in the usual way by the compositor, who reads his copy in vertical columns instead of in horizontal lines, and this has been succeeded by the casting operation, a column of type will be produced as distinguished from a line of type and such columns will be separated from one another by vertical lines without requiring the use of separate rules. Such columns may be inserted side by side in an appropriate manner in a form for printing.

In order to more clearly explain the nature and effect of my invention and how it may be practically applied, I will now refer to the accompanying drawings, which form a portion of my specification.

Figure 1 represents one view of a matrix bearing a simple character—namely, the nu-

meral "9." Fig. 2 shows a matrix bearing a letter associated with a line extending entirely across the thickness of the matrix. Fig. 3 is a matrix with a simple line without other associated character. Figs. 4, 5, 6, 7, and 8 show matrices with combinations of characters and lines such as are required for printing tables. Fig. 9 is another view of any one of the matrices, showing at *a* the formative cavity containing the engraved character or characters. Fig. 10 represents an assemblage of bars cast with the type in columns. Figs. 11, 12, and 13 represent matrices constructed for the purpose of printing underlined characters without separate rules, and Figs. 14 and 15 represent lines of type which would result from the use of such matrices as are represented by Figs. 11, 12, and 13.

If a number of matrices such as are represented by Figs. 2 to 7 are assembled and a casting produced from them, the several lines on the matrices being placed end to end will reproduce a continuous line on the slug which is cast from them, and adjoining the line there will be the various other characters which are desired to be printed or blank spaces, as the case may be.

Fig. 7 shows a matrix in which a second line is engraved. If such a matrix is used, a horizontal line will result, and a number of such matrices appropriately placed for the purpose of building up consecutive columns will effect the production of a continuous horizontal line in the printed matter.

For such work as above described it will generally be advisable for the matrices to be all of uniform thickness, in order that the characters contained in one vertical column may be accurately in a horizontal line with those in adjoining columns.

For the purpose of printing a railway time-table it would probably be desirable to associate two numerals side by side on one matrix either together with or without the engraved line on the left-hand side:

For printing the hours of the day matrices bearing numbers "1" to "12" would be required, each with the engraved line at the left hand, care being taken that all the unit-figures are at the same distance from the line, so that in the print they stand in one vertical line. For printing the minutes of the hour

matrices bearing numbers "1" to "59" would be required, and in general these should not have the line added. With such a number of different matrices, together with others to express the ordinary signs used in time-tables, the times of departure of each train could be built up in two columns side by side.

Fig. 10 shows an assemblage of slugs vertically disposed side by side for printing.

The method described, whereby the effect of a vertically-placed rule may be obtained with bars of type without having to resort to the use of separately-inserted rules, may be extended so as to derive the effect of a long or short horizontal rule for underlining or emphasizing words or phrases or for other purposes without the use of such separate rules by employing a set of matrices such as are shown in Figs. 11 and 12. In these each matrix is provided with a line underneath the numeral or other character. The slug cast from an assemblage of such matrices is shown in Fig. 14. In this case the underline is discontinuous between the words.

If a continuous line is required, as shown in Fig. 15, a spacing-quad bearing a line en-

graved on it, as shown in Fig. 13, may be inserted between the words.

I claim—

1. A matrix engraved with a line in the direction of its thickness together with a numeral or letter so placed by its side that, on casting a bar of type from an assemblage of such matrices, the bar will constitute a column of type having a continuous vertical line together with numerals or letters by its side, substantially as described.

2. A matrix engraved with a line in the direction of its thickness together with a numeral or letter, the matrix being thus adapted, when assembled with others similarly engraved, to produce, by casting, a slug from which may be printed a continuous line with letters and numerals adjacent thereto.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

THOMAS CLEGHORN.

Witnesses:

ROBT. A. BLAKE,  
WALTER J. SKERTEN.