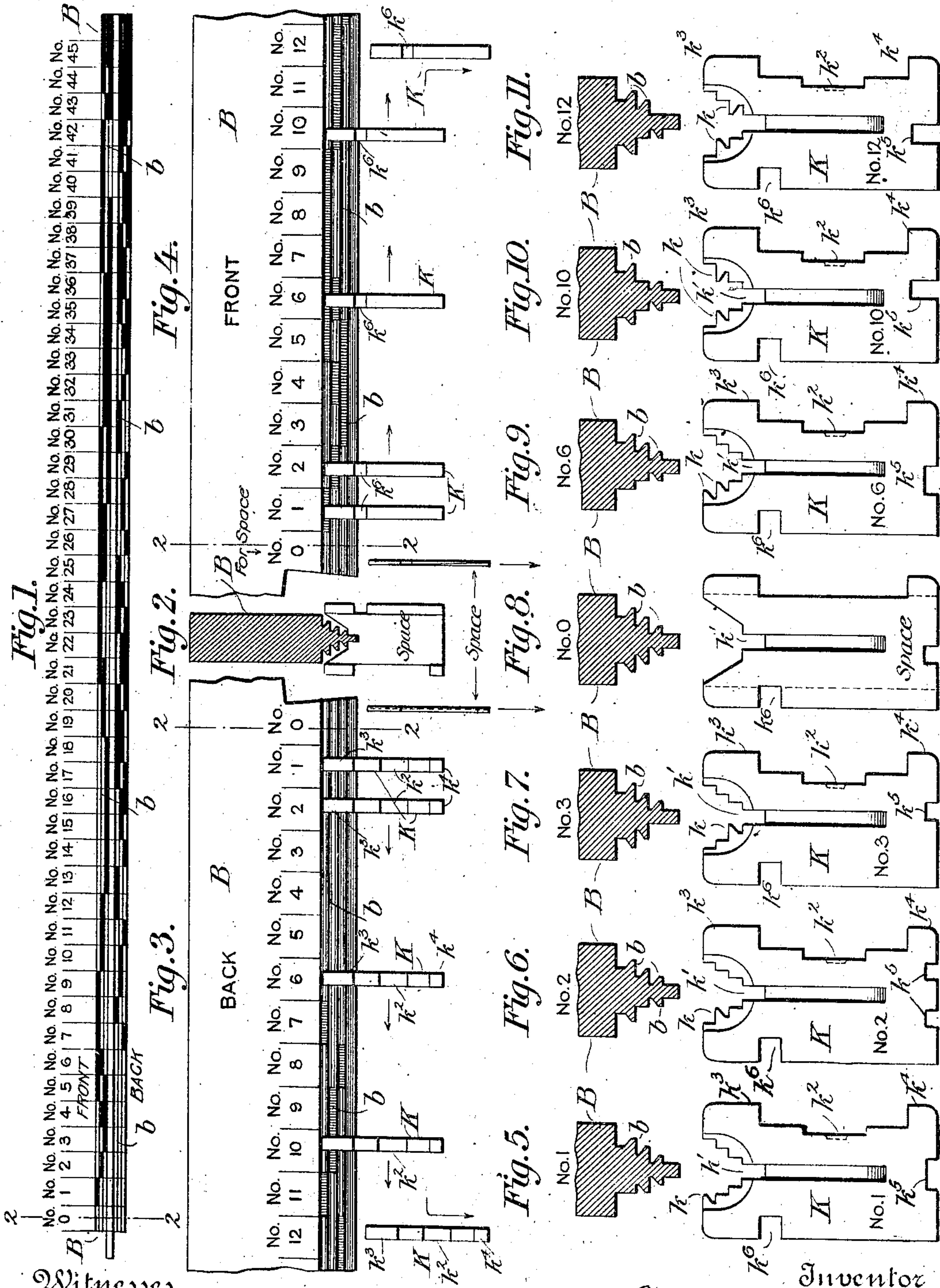


A. DOW.
MATRIX FOR LINOTYPE MACHINES.
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Witnesses
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UNITED STATES PATENT OFFICE.

ALEXANDER DOW, OF NEW YORK, N. Y., ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

MATRIX FOR LINOTYPE-MACHINES.

No. 887,034.

Specification of Letters Patent.

Patented May 5, 1908.

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Serial No. 410,074.

To all whom it may concern:

Be it known that I, ALEXANDER DOW, of city of New York, county of New York, and State of New York, have invented a new and useful Improvement in Matrices for Linotype-Machines, of which the following is a specification.

My invention relates to circulating matrices such as are used in Mergenthaler linotype machines and kindred machines, wherein the matrices, stored in magazines, are released one at a time, composed temporarily in justified lines, and transferred to a casting mechanism, wherein they form relief characters on the edge of slugs or linotypes cast in a mold, after which they are returned through a distributing mechanism to the magazine channels from which they were discharged.

My invention has reference more particularly to matrices provided with combinations of distributing-teeth, whereby they are sustained while being carried along a toothed distributor-bar until they arrive over their appropriate magazine channels, as described, for example, in U. S. patent to Mergenthaler, 347,629.

In the Mergenthaler construction, each matrix containing a V-shaped notch at the upper end, is provided in each wall of the notch with one, two or more teeth, the number and arrangement of the teeth in one side being identical with that on the opposite side. In other words, the opposed groups of teeth on one end of the matrix are identical. This fact makes it necessary, in order to distribute the required variety of characters, to use six or more teeth on each side. As these teeth must be of substantial size, and as considerable clearance must be left between the teeth of the matrices and those of the distributor-bar, it is impossible to reduce the distributor-bar and the matrices in size to the extent desired.

The aim of my invention in this regard is to so arrange the distributing-teeth that a small number of large teeth may be arranged in a limited space without decreasing the number of combinations, and to this end it consists broadly in providing matrices with opposed unsymmetrical or unlike combinations of teeth. In other words, I differen-

tiate the opposing combinations both of which are in action at the same time, as to the number or the relative positions of their teeth, or both. In this manner, I am enabled to secure with a small number of teeth, the same results as are obtained with a much greater number of teeth in the Mergenthaler system. The matrices thus constructed, are adapted to be used in combination with a distributor having dissimilar opposed combinations, as shown for example in application for Letters Patent of the United States Serial No. 381,276, filed by me on the 22nd day of June, 1907.

My invention also relates to a special form of the body of the matrix, as hereinafter explained.

In the drawings,—Figure 1 is a side elevation of a distributor-bar constructed in accordance with my invention. Fig. 2 is a cross-section of the same on the line 2—2 Figs. 1, 3 and 4. Figs. 3 and 4 are side elevations on a larger scale, of the receiving end of the bar viewed from opposite sides, including the combinations or groups of teeth which bear like numbers in Fig. 1. Fig. 5 to 11 are face views of typical matrices showing variant and unsymmetrical arrangements of the distributing-teeth therein, each of these views representing also the sectional form of the distributor-bar at the point at which the matrix is released therefrom.

Referring to the drawings, B represents the horizontal fixed distributor-bar, having its lower edge of V-form in cross-section, and with longitudinal distributing-teeth *b* on opposite sides, these teeth being located at different heights and made of various lengths. They are permuted or arranged in such manner that the bar is of constantly varying form in cross-section from one end to the other, the successive groups or combinations of teeth being such, in relation to those of the matrices, that each matrix will be suspended by the teeth while traveling along the bar until it arrives over the proper magazine channel, when, for the first time, all of its teeth will be disengaged so that it may fall from the bar to the magazine. This method of arranging the teeth, and the principles involved in determining the combinations, are well under-

stood by those skilled in the art. The bar herein shown, unlike that of the Mergenthaler patent, has the combination at any one point in its length different from the combination directly opposite, and this in order that the opposing combinations may jointly coöperate in suspending the matrices which form the subject of the present invention.

10 The matrices K, so far as the distributing feature is concerned, may have any desired outline or marginal form. Each matrix is provided in the upper edge with a V-shaped notch, and the opposing walls or edges of these notches are provided with the inwardly projecting distributor-teeth k at various heights. There may be any desired number of these teeth on each side. They are arranged in different numbers or combinations in the matrices containing different characters, all matrices containing the same character, however, being alike.

The teeth in one side of the matrix differ as to their number or their relative positions, or as to both number and relative positions, from those on the opposite side. In other words, the opposing combinations or arrangements of teeth are dissimilar or unsymmetrical. The effect of this is to permit the use of a small number of teeth in each edge of the matrix, so that teeth of large size may be employed in a small space, or in other words, in a matrix of a small size. This result is due to the fact that the opposing unlike combinations coöperate with a matrix at the same time, so that the two combinations act as one. In other words, the combination as a whole, at any point in the length of the bar, is represented by the teeth on one side plus the opposing and differently arranged teeth on the opposite side. In other words, the combination of a given number of teeth, instead of being completed on each side of the bar, is divided between the two sides.

It will of course be understood that as a matrix is carried along the bar, certain of its teeth on either or both sides will be repeatedly engaged and disengaged, and that it will be held in suspension until all of the teeth are disengaged at one time.

By reference to Figs. 5 to 11, it will be seen that each of the matrices will be free to leave the bar at the point where the latter has the form shown opposite the matrix. It will be observed, however, that if these matrices are transposed, any one of them will be retained on the bar where it has either of the other forms shown in said figures.

60 The essence of the invention resides in using on the matrix opposing or coöperating combinations which are unlike. Of course the form of the teeth and of the walls which

carry them may be modified at will, provided they have the mode of action herein described.

In order to permit the practical use of these matrices in a machine which I have invented, and especially to permit their use in connection with certain expansible spacers which form the subject-matter of an application for Letters Patent of the United States, Serial No. 410,149, filed Jan. 10, 1908 I give them the form herein shown.

Each matrix consists of a flat plate K, having in one of its vertical edges the character or matrix proper k^2 . The matrix has a generally rectangular outline, and the edge in which the matrix is located, commonly known as the front edge, is recessed or cut back in such manner as to leave a vertical middle portion with horizontally projecting ears k^3 and k^4 at the upper and lower ends respectively. These shoulders are utilized to sustain the matrices while traveling through the machine; also to effect their alinement in the casting position; and also to prevent them from moving endwise as the wedge spacers or justifiers are thrust through the line between and against the matrices. At their lower ends the matrices are each provided with one or more notches k^5 . These notches differ in size or arrangement as between the matrices containing different characters, and are utilized in connection with a distributing mechanism.

The rear or vertical edge of the matrix is made without shoulders, and continuous from top to bottom, except that it may be provided with a notch k^6 , which is utilized in connection with the alining and sustaining devices of the linotype machine.

I prefer to provide the matrix also in the upper end with a central notch k^7 extending downward below the toothed portion, and of sufficient size to receive a continuous guiding rib formed on the lower edge of the distributor-bar, and serve to prevent the matrix from swaying or shifting edgewise during its travel along the bar.

By the expression, "opposed combinations" and similar expressions herein, I refer to combinations which are located at the same end of the matrix, or in such relation to each other that both combinations are operated at one time in connection with the distributing mechanism.

Having described my invention, I claim and desire to secure by Letters Patent:—

1. A matrix provided at one end with opposed unlike distributing-teeth.

2. A matrix provided at one end with two unlike combinations of distributing-teeth.

3. A matrix provided in its upper end with a V-shaped notch, and with unlike distributing-teeth in opposite sides of the notch.

4. A matrix having in its upper end two unlike series of distributing-teeth and a central notch k' below said teeth.

5. A matrix having in its upper end a central notch k' , and above said notch opposed dissimilar arrangements of teeth.

In testimony whereof I hereunto set my

hand this nineteenth day of December, 1907,
in the presence of two attesting witnesses.

ALEXANDER DOW.

Witnesses:

A. V. R. BARMWALL,
WILLIAM F. SMAIL.