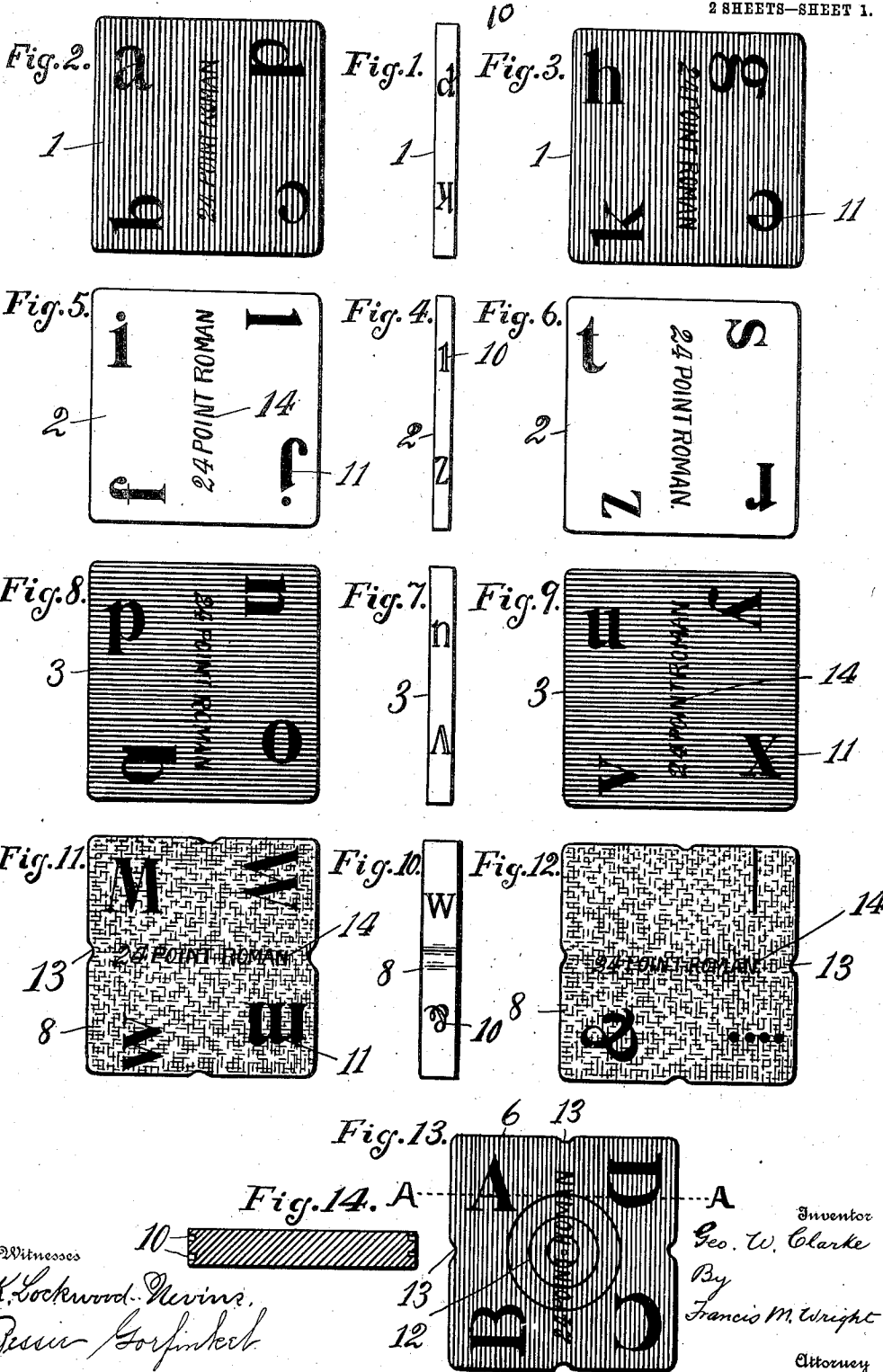


965,155.

Patented July 26, 1910.

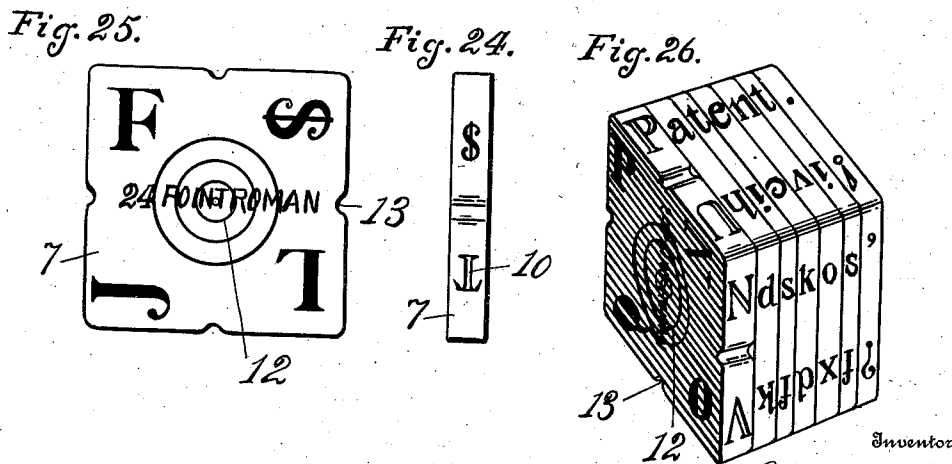
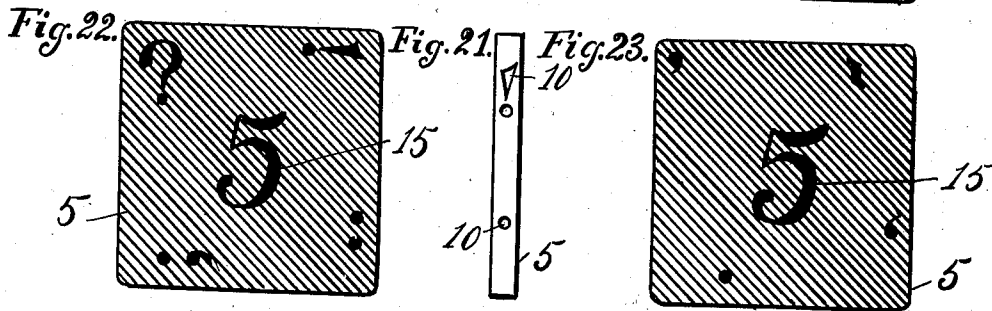
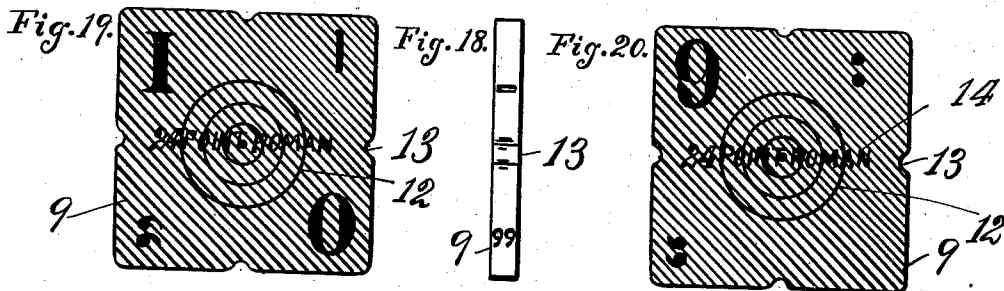
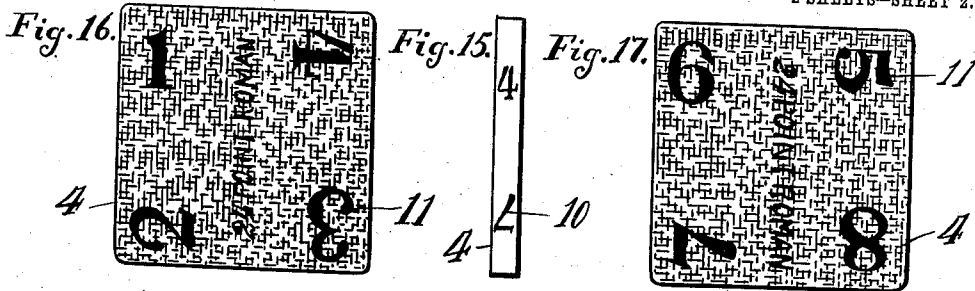
2 SHEETS—SHEET 1.



965,155.

Patented July 26, 1910.

2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE W. CLARKE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-FOURTH TO
TARLETON B. EASTMAN AND ONE-FOURTH TO FRANCIS M. WRIGHT, OF SAN
FRANCISCO, CALIFORNIA.

MATRIX-PLATE.

965,155.

Specification of Letters Patent. Patented July 26, 1910.

Application filed November 27, 1903. Serial No. 182,936.

To all whom it may concern:

Be it known that I, GEORGE W. CLARKE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Matrix-Plates, of which the following is a specification.

My invention relates to an improved matrix plate for forming printing type.

In the accompanying drawings, Figure 1 is an edge view of one form of matrix plate; Fig. 2 is a view of the left side thereof; Fig. 3 is a view of the right side thereof; Figs. 4, 5, 6 are corresponding views of a second form of matrix plate used in my apparatus; Figs. 7, 8, 9 are corresponding views of a third matrix plate; Figs. 10, 11, 12 of a fourth matrix plate; Fig. 13 is a view of the left side of a fifth matrix plate; Fig. 14 is a section on the line A—A of Fig. 13; Figs. 15, 16, 17 are views corresponding to Figs. 1, 2, and 3 of a sixth matrix plate; Figs. 18, 19, 20 of a seventh; Figs. 21, 22, 23 of an eighth; Figs. 24, 25 are views corresponding to Figs. 1 and 2 of a ninth matrix plate; Fig. 26 is a perspective view of a series of such matrix plates set up to cast a line of type of a single word.

Referring to the drawings, 1, 2, 3, 4, 5, 6, 7, 8, 9 represent matrix plates of any suitable metal, as brass, square in shape but with corners rounded to avoid damage by impact to the matrices of other plates. The matrices 10 are in the edges of the plate, two in each edge, making eight in the whole plate. These matrices may be formed in any desired manner as by electrotyping, casting, or punching with steel dies. Matrix plates 1, 2, 3, contain the matrices for twenty-four letters of the alphabet. Of these twenty-four, the narrowest eight letters are selected to be formed in the same matrix plate 2, which is thinner than the other two matrix plates for the other sixteen letters. The eight narrow letters so selected are i, f, j, l, r, s, t, z. Of the remaining letters a, b, c, d, e, g, h, k, are formed on one matrix plate 1, and o, n, p, q, u, v, x, y, on another 3, both plates of substantially the same thickness. The remaining two letters of the alphabet, m and w, are of extra width, and require a matrix plate 8 of extra thickness.

The matrix plates are distinguished by

their color. In the present instance the plate 1 is shown as colored red, 2 white, 3 blue, and 8 yellow. The eight letters formed by each matrix plate are indicated on the sides of the plate, as shown at 11, each index having the same location on the plate relative to its matrix therein. Thus, the index or letter marked in the upper left hand corner corresponds with the left hand matrix in the upper edge.

In assembling the matrices for casting a line of type, the matrix plates are turned so as to bring the required sequence of letters all to the farther upper corner facing the left; their matrices will then be in the top edges on the far side of the center, and this is the position in which the matrices are used for casting. The operator quickly becomes familiar with the relative positions of the letters and matrices on each matrix plate, so that on taking up the plate he can in the same movement turn it to bring the required letter to the farther upper corner facing the left, bringing the corresponding matrix to the proper place. However, the memorizing of the arrangement of the letters is facilitated by the location of certain key letters; thus on plate 1 the vowels a and e are placed in what may be termed the opposite positions, that is, so that a half turn of the plate about a horizontal axis changes it from the casting position of the one vowel to that of the other. In like manner the vowels o and u are arranged in the opposite position on plate 3. On plate 2, the letter r and the vowel i have the opposite positions. On all three plates the other letters follow the above key letters in alphabetical order as nearly as possible. As to the capital letters, the matrices of the capitals M and W are formed in the same matrix plate 8, as the small letters m and w. Of the other twenty-four letters, all but the capital letter I have the matrices formed in three matrix plates, colored red, white and blue. Of these the red plate 6 is identical in its arrangement of matrices and letters with the plate 1. So is also the blue plate for the capitals (omitted from the drawings) with the blue plate 3. For the matrix of the capital letter I in the matrix plate 7 is substituted that of the sign of the dollar, \$, the arrangement of the other letters being like that of the plate 2. The capital letter I has its matrix formed in another matrix plate 9.

Eight of the numerals 1, 2, 3, 4, 5, 6, 7, 8, have their matrices formed in a single matrix plate 4 colored yellow. To assist the memory they are arranged in pairs 1, 8, 2, 7, and so on, so that the sum of each pair equals 9, and the members of each pair are placed in opposite positions on the plate. The figures 0 and 9 have their matrices in opposite positions on a matrix plate 9 colored green together with the capital I, quotation and other marks. Also on this plate as well as on the plate 8 is left a blank for spacing letters. The matrix plate 5 for the principal points used in printing, as the comma, period, and so on, is colored green.

The matrix plates 6, 7, 8, 9 for the capitals are distinguished from those for the small letters, first, by the eye by the different sizes of the indices or letters and also by means of central circles 12, and, secondly, by the touch, by the difference in thicknesses and also by notches 13 in the center of the edges.

In addition to the above, extra matrices may be provided for reference marks, accented letters, diphthongs, fractions, and points of the same thickness as figures for use in tabular work where alinement is required equally in both directions. These extra matrices may be colored black with index letters filled in with white, and with Roman numerals I, II, III, IV, etc., to distinguish them readily from each other and from the matrices more generally used. Also blanks, the size of matrix plates, may be used for spacing between the letters of words, or for filling out blanks in lines, which blanks may be labeled, according to thickness, as 1 point, 2 point, etc.

An index in the center of the side of the plate indicates the face of type the matrix will produce, and is a safeguard to the operator against the use of wrong sorts, and as an aid in the removal of extra matrices which have been used in conjunction with those from which are cast the main part of any work. This index may be either in the form of words 14, or of a number 15, referring to a tabulated list of type faces.

The matrices of all letters, large or small, are placed so that the part of the matrix corresponding to the alinement of the letters are at a uniform distance from the center of the edge. The matrices point or extend outward from the center, or toward the corners, that is to say, the part of the matrix which forms the top of the letter is nearer

the corner, and that which forms the bottom is nearer the center, of the edge. By this means, when a series of matrices are set up, all the matrices, whether of large or small letters, are on a straight line. This position of the matrix should be maintained constant not only for all letters of the same face, but for letters of varying sizes and faces. By this means any combination of types or characters of letters, however diverse, may be cast in one line. It is necessary, for this purpose, that the bottom of the matrix should be at a sufficient distance from the corner to accommodate the largest size of letters used in ordinary printing. Naturally, for display printing, special sizes of matrices will be provided.

In operating this system, the matrix plates are not distributed like type, but are spread out indiscriminately on an operating table. This table should preferably be arranged so that the matrix plates 1, 2, 3, by which nearly all the work is done, are kept separate from the other matrix plates which are rarely used. The operator selects the proper matrix plate for each letter by the color, and places them in his left hand, one behind the other, for the proper sequence of letters to form a word. When the matrices of the words of a line have been thus arranged, and their matrix plates suitably spaced, a line is cast therefrom. The spacing mechanism and that for casting the line, however, form no part of my present invention.

I claim:—

A square matrix plate having two matrices formed in each edge, all eight matrices adapted to cast letter types different but of substantially the same width, all the eight matrices being at the same distance from a corner of the matrix plate, and the plate having formed on each side, in the corners thereof, the four letters which correspond to four matrices, one in each edge of said plate, the location of each letter so formed relative to that of its corresponding matrix being uniform for all of said eight letters and matrices, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE W. CLARKE.

Witnesses:

FRANCIS M. WRIGHT,
BESSIE GORFINKEL.