

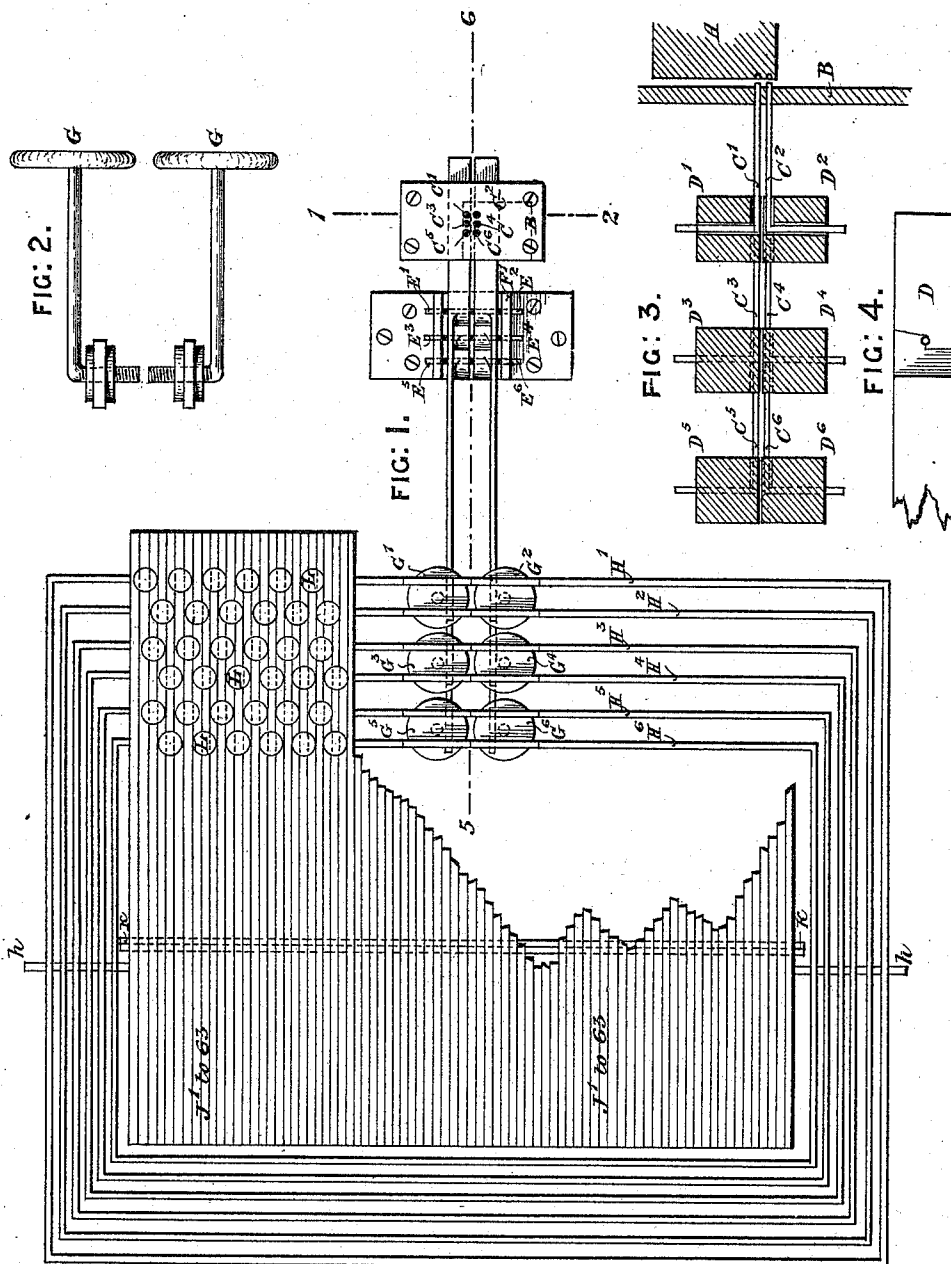
(No Model.)

3 Sheets—Sheet 1.

N. G. BARNETT.
TYPE WRITING MACHINE FOR THE BLIND.

No. 537,960.

Patented Apr. 23, 1895.



Witnesses:

E. B. Bolton
M. B. Barker.

Inventor:

Neville George Barnett

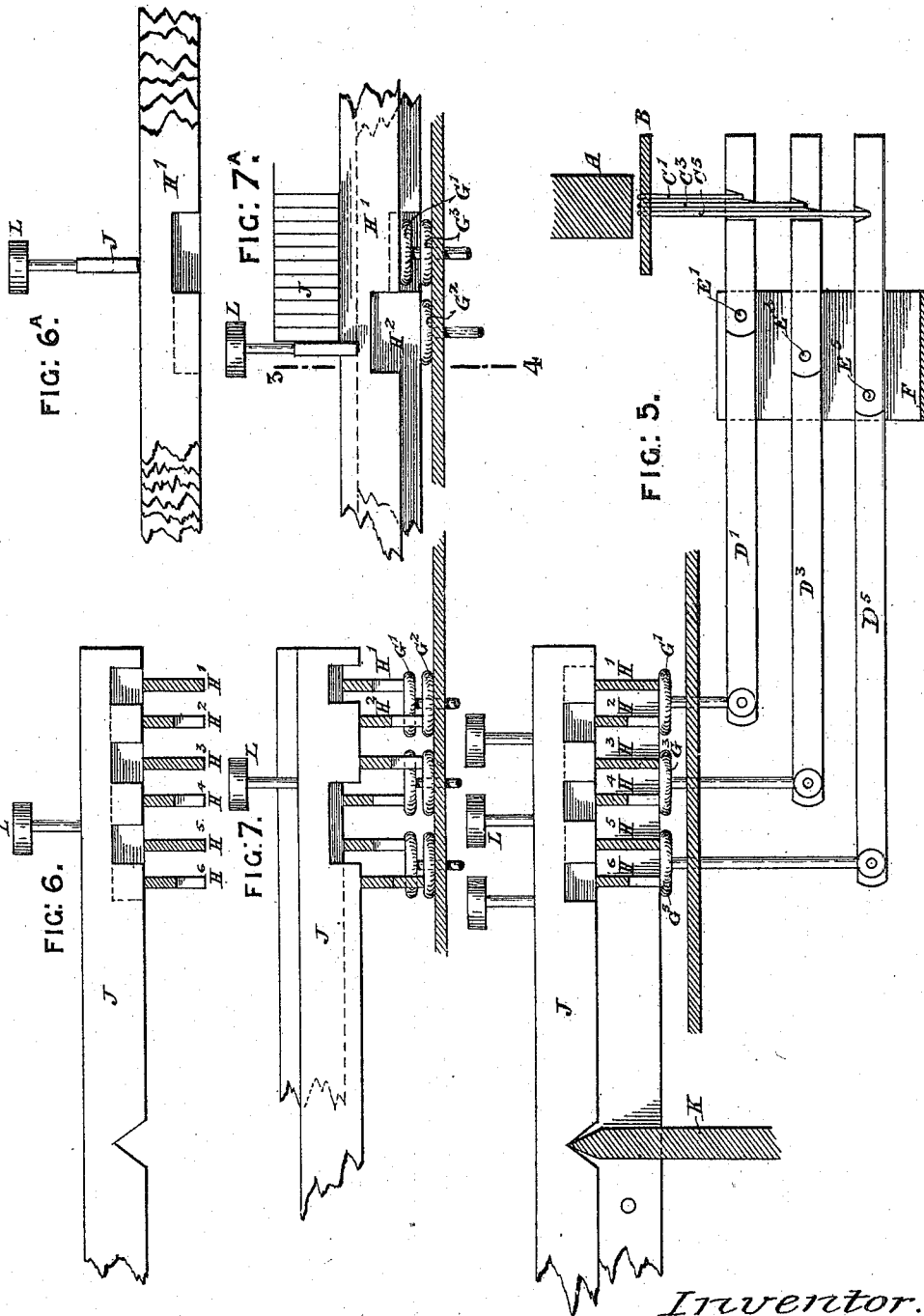
By *Richard Lee*
his Attorneys.

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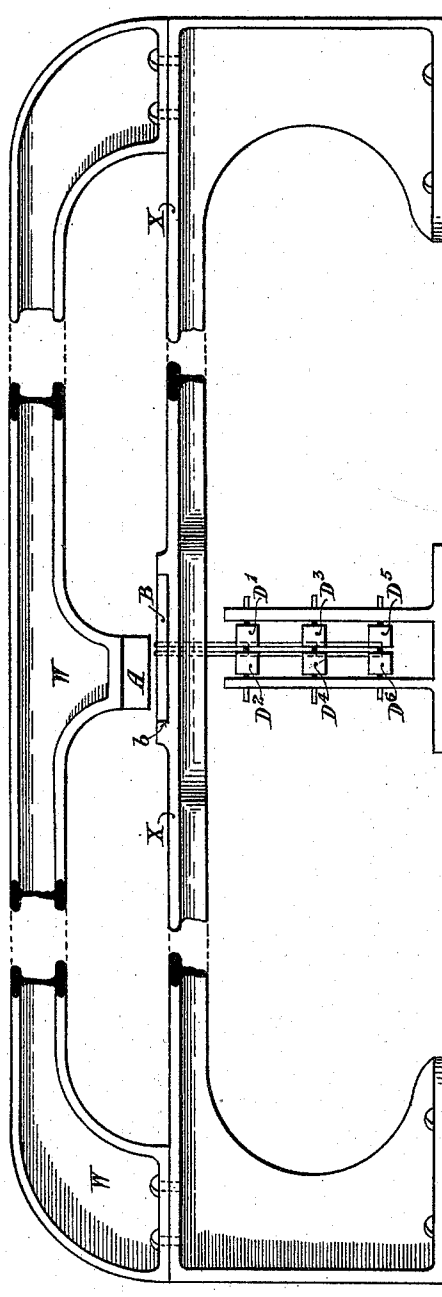


FIG. 8.

Witnesses:

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UNITED STATES PATENT OFFICE.

NEVILLE GEO. BARNETT, OF SYDNEY, NEW SOUTH WALES.

TYPE-WRITING MACHINE FOR THE BLIND.

SPECIFICATION forming part of Letters Patent No. 537,960, dated April 23, 1895.

Application filed January 17, 1894. Serial No. 497,213. (No model.)

To all whom it may concern:

Be it known that I, NEVILLE GEORGE BARNETT, Fellow of the College of Organists and instructor of the blind, residing at Sydney, in the Colony of New South Wales, have invented an Improved Punctograph or Point-Writing Machine for the Blind, of which the following is a specification.

This machine is an improved punctograph or point writing machine for writing or embossing raised characters for the blind, whether the system of point writing be the "Braille point" or the "New York point" system, and is so devised and constructed that it can be operated as readily by a seeing person who has no knowledge of the punctograph characters as it can be by a blind person who has a thorough knowledge of the combinations of dots that form the letters and other characters in either of the above mentioned systems of point writing.

Before proceeding with the description of the machine, it is important to note that all point writing apparatus for the blind must necessarily have a group of six embossing punches arranged in two rows of three each together with a matrix or die that is provided with six indentations corresponding to the points of the punches. Consequently, neither the arrangement of the punches nor the indentations in the matrix can properly be made the subject for a grant of Letters Patent, such devices being well known, and having been the common property of the public for a considerable period.

The machine is so far automatic in its action that if a key that is labeled with an ordinary Roman character be depressed the equivalent character represented in dots will be embossed upon the paper.

The machine consists essentially of a number of levers and punches so ordered and arranged that punctograph characters consisting of any number of points from one to six or any combination of such points may be produced either by the depression of a single key or by the depression of the same number of keys as there are points in the character to be produced. In the first case the given combination of points is produced automatically by the machine itself, on a key repre-

senting that particular letter or character being depressed, while in the second case the desired combination of points has to be made by the operator himself and he must therefore, in order to do this, be well acquainted with the system adopted.

The machine is equally adapted for use with the Braille or New York systems of point writing, but the system adopted to illustrate the invention in the specification and drawings is the Braille.

In the accompanying drawings, Figure 1 is a plan view of the machine, some of the levers being broken off to show the parts of the machine that lie beneath. Fig. 2 is a detail showing the mode of attaching the lever knobs to the punch levers. Fig. 3 is a detail, showing the points, styles, or punches and their attachment to the punch levers at the ends remote from the lever knobs, and also illustrates the position of the matrix relative to the punches. Fig. 4 is a detail showing in inner side elevation, the end of the punch levers that carry the punches. Fig. 5 is a longitudinal vertical section of the apparatus the section being taken on the line 5-6 of Fig. 1. Fig. 6 shows one of the key levers in side elevation and the six transverse or secondary levers in cross section. Fig. 6^a is a front or end view of Fig. 6, and shows the key lever in end elevation, and the secondary levers in front elevation. Fig. 7 is a side elevation of two of the key levers, one behind the other, one of them being depressed and acting upon a combination of the secondary levers, which in their turn operate the lever knobs, and which in their turn, through a system of levers, actuate the punches, the section of the secondary levers being taken on the line 3-4 of Fig. 7^a. Fig. 7^a is a front or end view of Fig. 7. Fig. 8 is a back or end view of the machine, showing a mode of mounting and carrying the matrix and guide plate for the styles, and will be hereinafter more particularly described.

A is a matrix or die on the under side of which are six small indentations in size and position corresponding to the six essential points of the punctograph full character, and are intended to receive the points of the styles or punches.

B is a guide plate, perforated correspondingly with six holes and through which the styles pass upward.

C¹ to C⁶ is a corresponding group of six styles, which pass upward through the guide plate and are connected below to the short ends of six levers, D¹ to D⁶, which rock upon fulcrums E¹ to E⁶ that are supported on a fixed fulcrum bearing F F'. Each of the levers D¹ to D⁶ terminates at the end most remote from the punches in lever knobs G' to G⁶ by means of which the ends of punch levers are brought to a common level, and occupy positions corresponding to an enlargement of the "full character," of the system of point writing adopted. Supported in a frame (not shown in the drawings) is a system of six levers, H¹ to H⁶, which overlie the rows of lever knobs, G' to G⁶. These levers will be hereinafter referred to as the secondary or intermediate levers. They are set transversely or at right angles to the punch levers. Each secondary lever must be so mounted upon springs or otherwise, so that when a downward pressure is brought to bear upon any portion of its upper edge, the lever shall be equally depressed throughout its whole length. In the drawings, such a system of mounting is shown in Fig. 1. Each lever is made rectangular shaped, thereby securing great rigidity of form, and counterweighted so as to obviate the necessity of using springs. The rectangles are of different dimensions, the smallest one being placed in the center, and so on to the largest one which is the exterior one. The whole system is mounted upon one axis, or fulcrum pin *h*. Each one of the secondary levers can only operate one of the lever knobs G' to G⁶, as it is recessed as shown in Figs. 6^a and 7^a, so as to avoid contact with any except the one desired. Above the secondary levers are mounted on a fulcrum bar K, the key levers J' to J⁶. These key levers run in the same direction as the punch levers D¹ to D⁶, and are therefore transverse in relation to the secondary levers H¹ to H⁶. The under edge of each one of these levers, with the exception of one, which is intended to operate the full character of six points, is recessed in a similar manner to the secondary levers so that when depressed, it will avoid contact with such levers as are not required. Thus, in Figs. 6 and 6^a a certain combination is shown, and the key lever will be caused to avoid the levers H², H⁴ and H⁶. These in their turn, will act upon their corresponding lever knobs and so the styles or punches C², C⁴ and C⁶ will be brought into action. Figs. 7 and 7^a show one of the key levers depressed, and acting upon the secondary levers H², H³ and H⁴, and thus, the styles, or punches, C², C³ and C⁴ will be brought into action. The key lever J, shown in Fig. 5 is recessed so as to represent the exact opposite to that shown in Fig. 6.

It is obvious that instead of the secondary and the key levers being indented or recessed,

as shown in the drawings, the levers may be provided with knobs or projections which will impinge upon the desired parts, while the spaces between the knobs or projections will act in the same way as the recesses shown in the drawings and cause the lever to avoid contact with the part it is not desired to actuate.

The position of the matrix A relative to the guide plate B, and the punches C, and the mode of mounting and securing A, and B, are important features in the invention.

It will be observed by referring to Figs. 3 and 8 that the indentations in the matrix or die are placed quite close to the edge of the matrix. This has been done for a special purpose. As in ordinary typewriting machines, when a character has been printed on the paper, the spacing mechanism (not shown in the drawings) will come into operation, and cause the paper to move one space forward. The indentations in the matrix should be placed so near to the edge of the matrix that when the paper is moved the regulation space forward the last character formed should become visible to a seeing person or may be felt by a blind person. In respect to the relative positions of the matrix and styles or punches, it is essential that the indentations in the matrix should be exactly opposite to the points of the punches, and that the points of the punches should enter the indentations so as to be concentric with them, otherwise should the point of a punch touch the edge of an indentation, the paper would be cut at that spot, and the character formed would be seriously damaged. In order to reduce this danger to a minimum I have found it advisable to mount the matrix and the guide plate practically in one piece, so that should one of these parts be slightly moved the other part may be caused to move in an equal degree. To this end I attach the matrix to an arch or standard W, which should be rigidly secured to or form one with a base plate X. The base plate X, is recessed or formed with a dove-tail *b*, at or near the middle of its length, to receive the guide plate B, the center of which should then lie immediately underneath the indentations in the matrix. Thus, should the arch W, be subjected to such pressure as would cause it to shift, the base-plate X, must necessarily shift with it, and so the relative positions of the styles and the matrix would remain unaltered.

When in complete working order this improved punctograph or writing machine for the blind, would be provided with proper spacing mechanism, with a paper carriage, warning bell, line spacer, and other mechanism essential to the proper, convenient, and expeditious working of ordinary writing machines, but as these appliances do not form any part of my invention, I have thought it better to omit them altogether from the drawings and the description, thus rendering it more easy to understand and appreciate those features which constitute my invention.

The knobs C' to G⁶ are accessible by removing the levers from above them thus uncovering the said knob. The lever frame may be removable as a whole.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

10 In combination in point writing machines for the blind, a system of levers, a series of punches connected to the levers at one end of the system, an equal number of knobs at the other ends of the levers, said punches and knobs being correspondingly grouped and a

second system of levers arranged to contact 15 with the knobs for operating the punches in certain combinations, said second system of levers being removable whereby the operator may form his own combination by direct contact of the fingers with the knobs, substantially as described. 20

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

NEVILLE GEO. BARNETT.

Witnesses:

T. ORMOND O'BRIEN,
Notary Public.
GEORGE L. MASON.