

C. MUEHLEISEN & C. A. ALBRECHT.
MEANS FOR ASSEMBLING MULTIPLE FACE MATRICES IN TYPOGRAPHICAL COMPOSING MACHINES.
 APPLICATION FILED MAY 28, 1910.

966,228.

Patented Aug. 2, 1910.

5 SHEETS—SHEET 1.

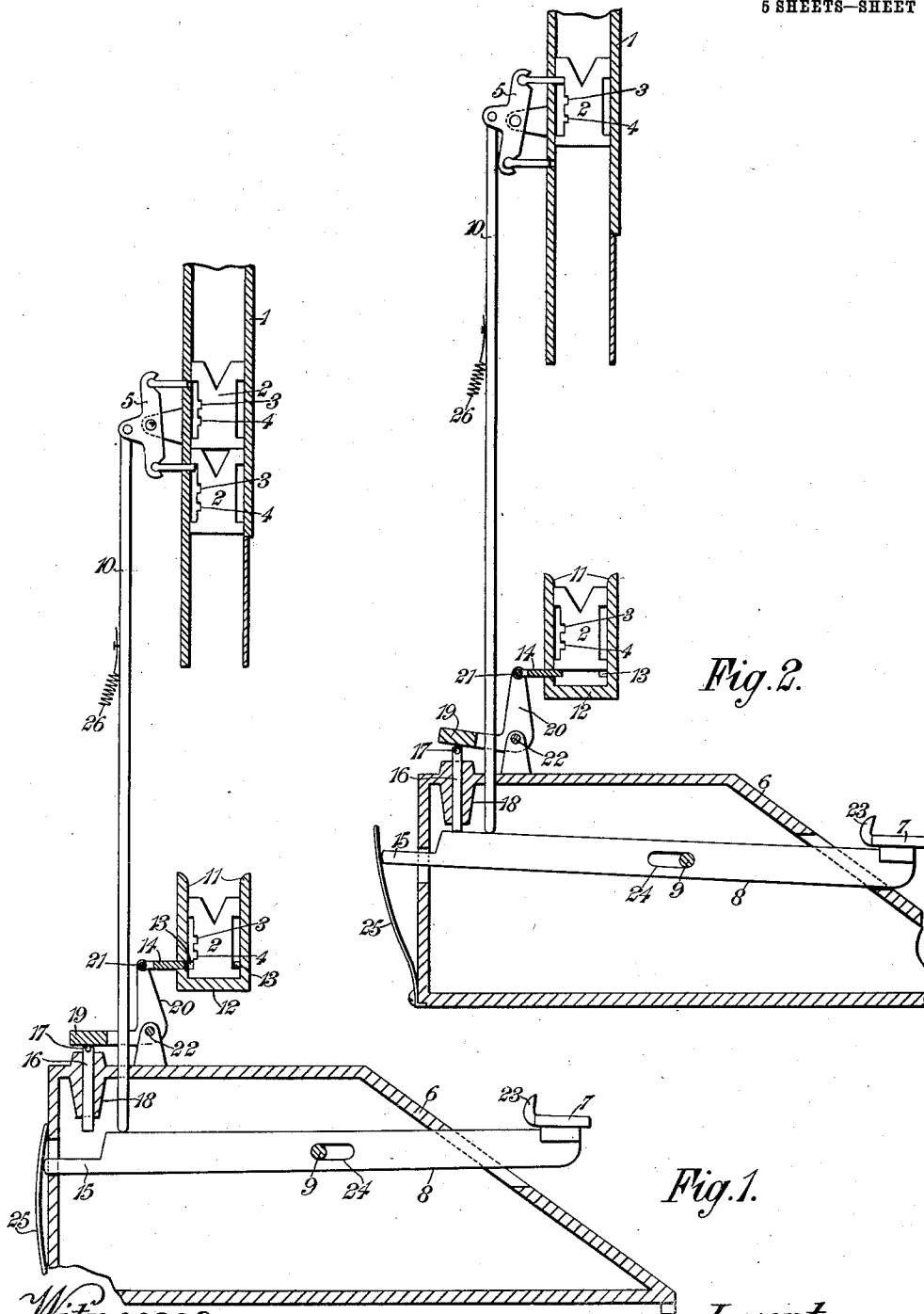


Fig. 2.

Fig. 1.

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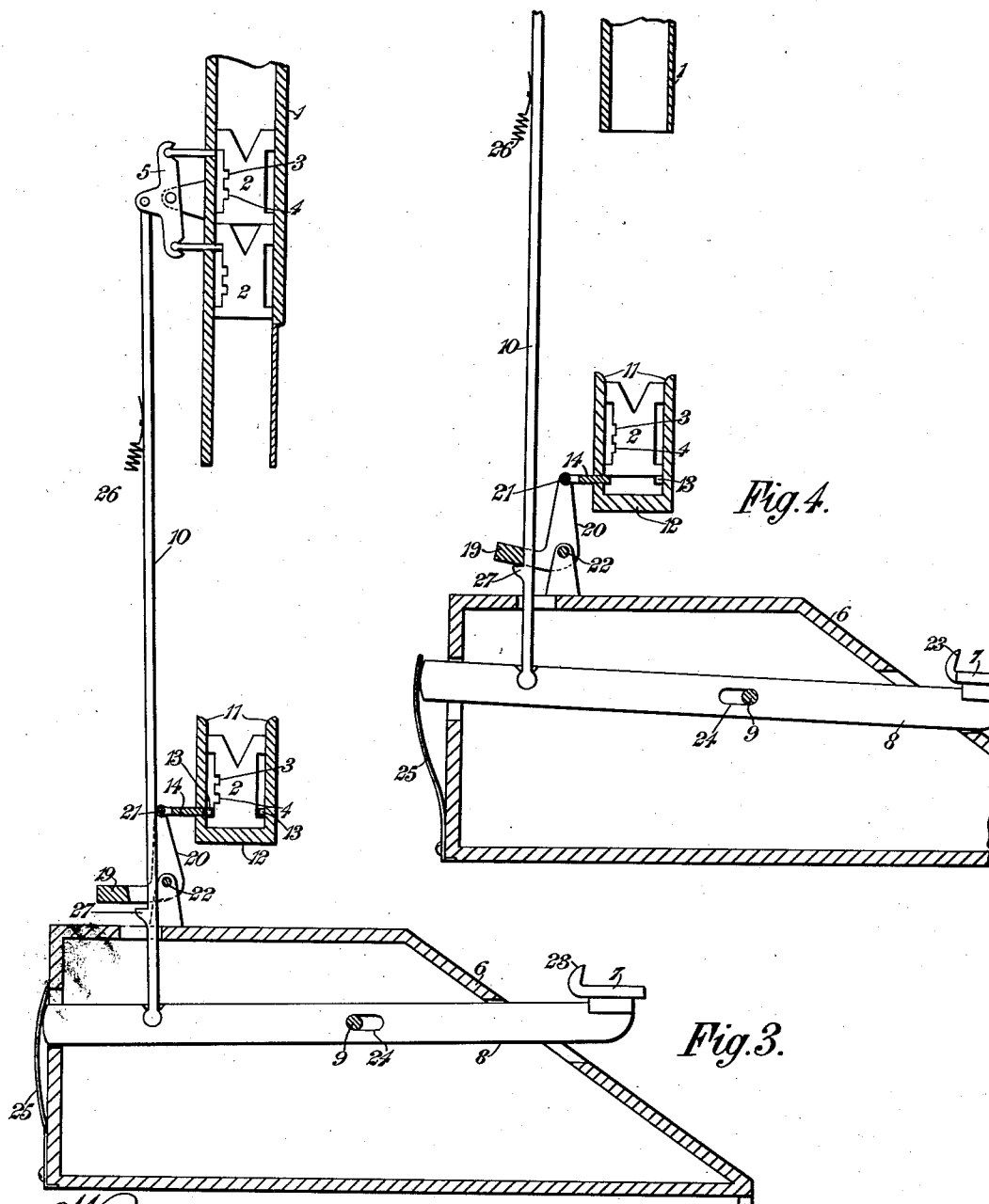
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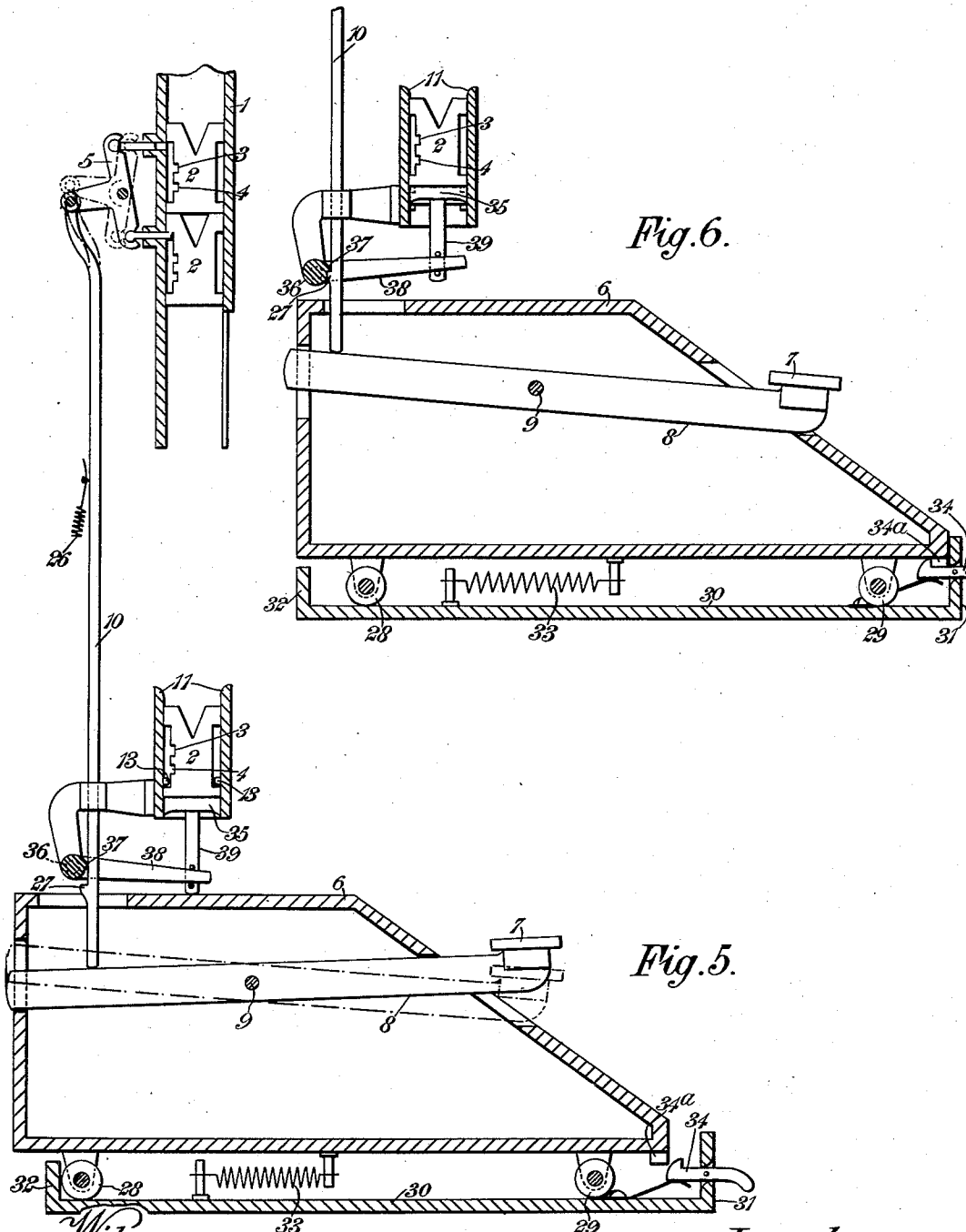


Fig. 6.

Fig. 5.

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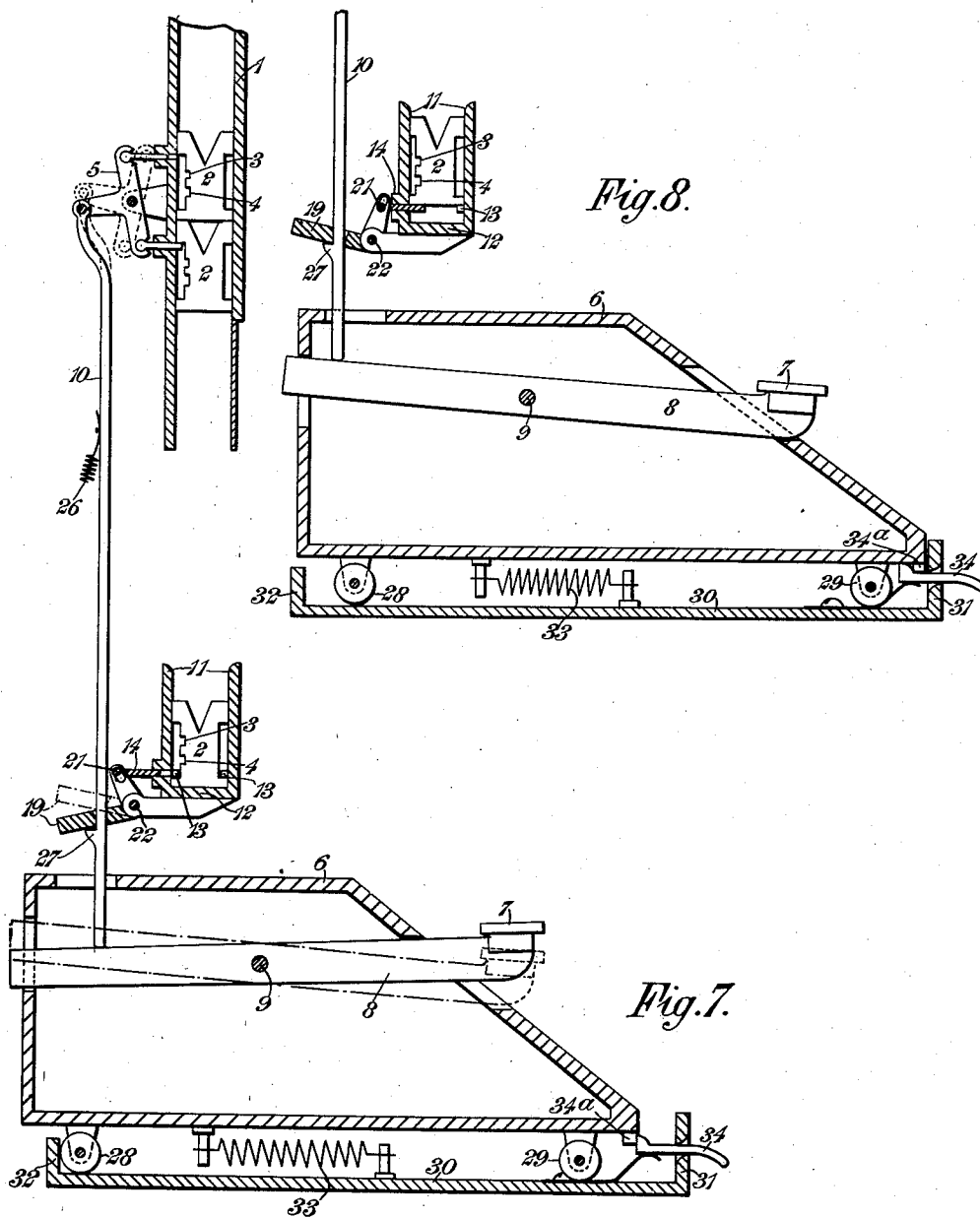
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5 SHEETS—SHEET 4.



Witnesses
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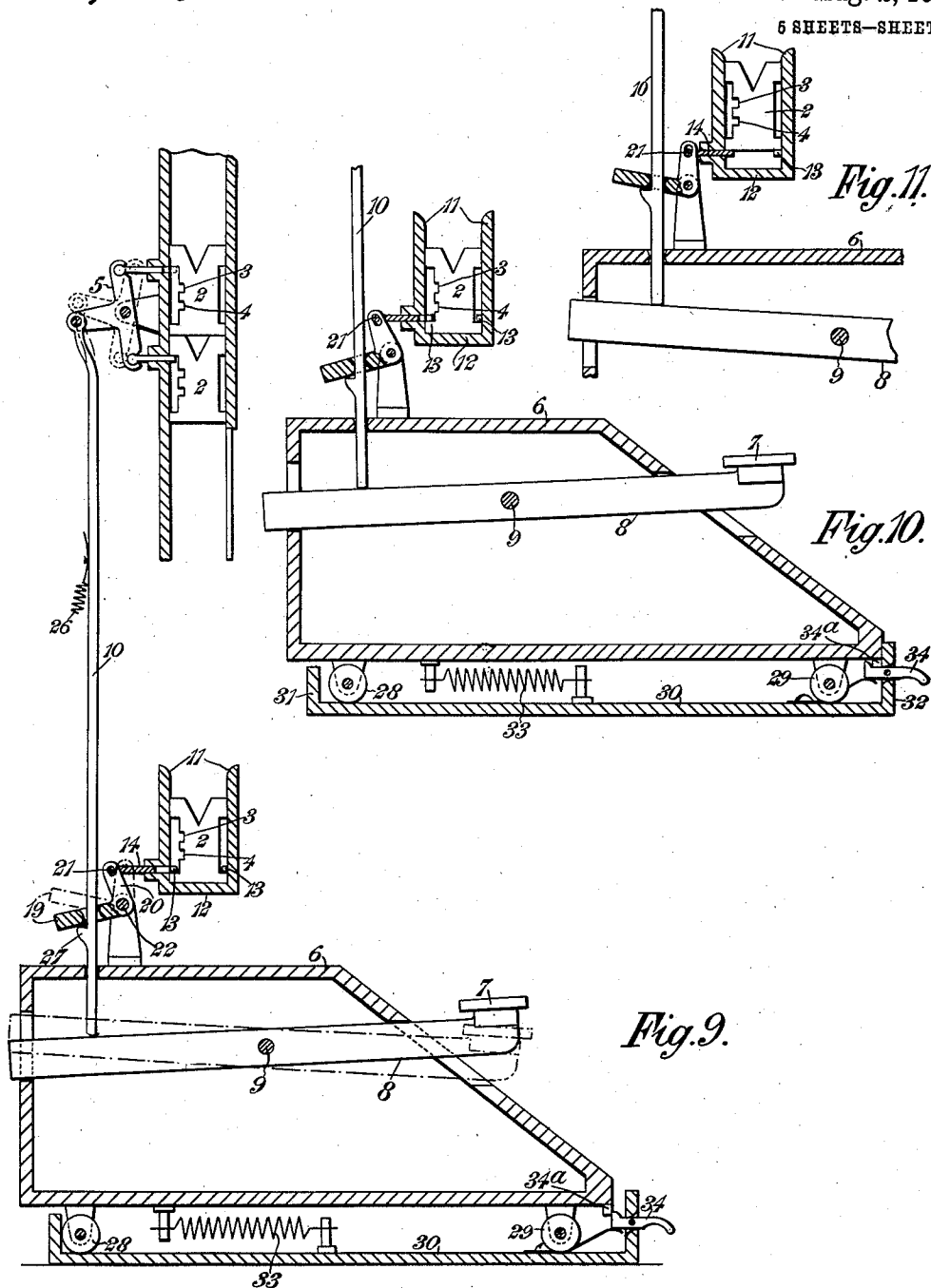
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

CARL MUEHLEISEN AND CHRISTIAN AUGUSTUS ALBRECHT, OF BERLIN, GERMANY,
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MEANS FOR ASSEMBLING MULTIPLE-FACE MATRICES IN TYPOGRAPHICAL COMPOSING-
MACHINES.

966,228.

Specification of Letters Patent.

Patented Aug. 2, 1910.

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To all whom it may concern:

Be it known that we, CARL MUEHLEISEN and CHRISTIAN AUGUSTUS ALBRECHT, citizens of the United States of America, and residing, respectively, at Nos. 88 and 23 Chaussee-strasse, Berlin, N. 4, in the Empire of Germany, have invented a new and useful Improved Means for Assembling Multiple-Face Matrices in Typographical Composing-Machines, of which the following is a specification.

This invention relates to improved means for assembling in a typographical composing machine of the general character represented in Letters Patent of the United States No. 436,532, matrices containing two characters or formative cavities usually of different faces or styles, either of which can be presented at the composing level at the will of the operator, and it has for its object to provide face-shifter mechanism which will enable the operator to control the assemblage of the matrices—so far as regards which character shall be presented at the composing level—by the respective matrix keys.

We believe it to be wholly new in the art to combine with matrices containing two or more characters each a single means under the control of the operator for effecting the release of the matrices and at the same time determining as to each matrix which of its characters shall appear at the composing level, and whereby the release of the matrices may be effected in connection with or independently of their positioning with respect to the composing level, at the will of the operator.

The invention is not limited in respect of its constructional details, because these are variable to any extent so long as the capacity just described is secured. Among the possible embodiments of the invention, five have been chosen for illustration.

Figures 1 and 2 are diagrammatic vertical sections of one embodiment, the former showing a matrix key ready to actuate only the respective escapement; and the latter showing the same matrix key adjusted by the operator to actuate both the face shifter and the said escapement. Figs. 3 and 4 are similar sections of a second embodiment: Figs. 5 and 6, similar sections of a third

embodiment: Figs. 7 and 8, similar sections of a fourth embodiment: and Figs. 9 to 11, similar sections of a fifth embodiment.

Referring to Figs. 1 and 2, 1 is a part of the matrix magazine; 2, 2, matrices; 3, a higher and 4 a lower face; 5, an escapement; 6, the case for the matrix key levers; 7, a matrix key; 8, its key lever; 9, its pivot; 10, an escapement rod from the escapement 5 to a top edge of the key lever 8; 11, 11, the sides of the assembler into which the matrices 2 enter in the order in which they leave their magazine 1; 12, its bottom upon which the matrices required to present their higher faces 3 in the composing line, rest; 13, a fixed ledge projecting into the assembler box from each side 11 of it; 14, a ledge in the same plane as the ledges 13 but in front (in terms of the direction in which the matrices travel) of the said ledges, so that if it were pushed into the path of the matrices, their feet would ride over it on to the ledges 13, 13, instead of under the latter on to the assembler bottom 12. 15 is an extension of each key lever 8 having its top lower than the top of the latter; 16, a push rod supported in a suitable guide (*e. g.* by a pin 17, 80 and a socket 18 in the case 6) over each extension 15 and with its bottom end normally in the plane of the top edge of the respective key lever 8; 19, a bar held by a bell crank lever 20 in connection with the tops of the row of push rods 16; 21, a loose connection between the opposite arm of the said lever and the ledge 14; 22, the fulcrum of the lever 20; 23, an upstanding piece on the rear edge of each key 7; 24, a slotted extension of the pivot hole in a key lever 8, long enough to allow of the rear end of the top edge of the latter being pushed under the row of push rods 16 as in Fig. 2; 25, a spring adapted to return the respective lever 8 to the front again—Fig. 1—and to keep it there; and 26, a spring to return each escapement 5 and key 7. It is the combination of the extensions 15, push rods 16, bar 19, bell crank lever 20 and ledge 14, that constitute the face shifter.

The action of the invention embodied as described, is as follows. As the springs 25 keep the keys 7 out of operative connection with the ledge 14, the depression of any key 7 does not push the said ledge into the path

of the matrices on their way to the assembler, because the extensions 15 will not reach the push rods 16, and will, therefore, assemble the matrices with their higher faces 3 at the composing level, as indicated by the matrix in the assembler in Fig. 1. If the operator requires matrices with their lower faces 4 at the composing level, he pushes the pieces 23 of the respective key levers 8 to the rear, thereby placing the tops of the rear ends of the latter under the respective push rods 16, and then depresses the respective keys 7, whereby the ledge 14 is pushed into the path of the matrices before they reach or enter the assembler, with the result that the matrices will present their lower faces 4 at the composing level, as shown by the position of the matrix in the assembler in Fig. 2.

The second embodiment (illustrated in Figs. 3 and 4) differs from the one just described in the following details:—Each escapement rod 10 has its bottom end connected with the respective key lever 8 so as to partake of its motion of adjustment, the case 6 being slotted accordingly, the extensions 15, push rods 16 and sockets 18 of the former example are dispensed with, the connection between each key 7 and the ledge 14 being by a shoulder 27 on each rod 10 adapted to engage under the bar 19 when the respective key 7 is pushed to the rear as shown in Fig. 4. It is the combination of shoulders 27, bar 19, lever 20, and ledge 14 that constitute the face shifter.

The embodiment illustrated in Figs. 5 and 6 differs from the two already described in all the keys 7 and their key levers 8 being movable together from one position to the other. To allow of this difference, the case 6 is mounted on rollers 28, 29, running on rails 30 between two stops 31, 32, in the one direction under the pull of a spring 33, and in the other under the operator's hand, the spring 33 holding it in one position; and a spring-actuated detent 34 coöperating with a snug 34^a on the case 6 and releasable by the operator, in the other. The top of the case is suitably slotted to clear the rods 10. The rods 10 lie on the levers 8 because they have not to partake of the above-mentioned adjusting motion of the latter. The face adjuster is shown as consisting of a vertically adjustable plate 35; a horizontal rod 36 having a ridge 37 and turning in suitable bearings, arranged to hold the said ridge at a proper distance above the shoulders 27; an arm 38 fast on the rod 36 and projecting toward the face adjuster, and a rod 39 depending from the plate 35 and having its bottom end loosely engaged with the adjacent end of the arm 38. If the operator requires matrices with their higher faces 3 at the composing level, he lets the spring 33 pull the case 6 to the rear, thereby shortening

the effective arcs of motion of the rear ends of the key levers 8 and, consequently, the distances which the shoulders 27 will be raised, so that the latter shall not raise the plate 35. If he requires matrices with their lower faces 4 at the composing level, he pulls the case 6 to the front, thereby lengthening the said effective arcs, the displacement of the case 6 being sufficient to make these lengthenings make the distances which the shoulders 27 will be raised, raise the plate 35. Thus the rods 10 have two lengths of rise according to the position of the case 6 and the escapements 5 have their pawls proportioned to properly coöperate with the matrices, with either of the two lengths of rise.

The embodiment illustrated in Figs. 7 and 8, differs from the one illustrated in Figs. 5 and 6, in that the case 6 is pulled to the front by the spring 33 instead of by the operator, and pushed to the rear by the operator instead of being pulled by the spring, to respectively lengthen and shorten the above-mentioned effective arcs of the key levers 8; and from the one illustrated in Figs. 3 and 4, in that the bar 19 and shoulders 27 are always in contact, but the face adjuster is so proportioned that a shorter effective arc of a key lever 8 does not push the ledge 14 into the path of the matrices—a longer effective arc being necessary to do that.

The embodiment illustrated in Figs. 9 to 11, has the same sliding case 6, levers 8, rods 10 and escapements 5 as the one described with reference to Figs. 7 and 8, and it has also a ledge 14, bar 19, bell-crank lever 20, loose connection 21, lever fulcrum 22, and shoulders 27 all practically as in the embodiment shown in Figs. 7 and 8. In this embodiment however, as distinguished from that last previously described, the rods 10 and the parts 14, 19, 20 and 22 all participate in the fore-and-aft adjustment of the sliding case 6, to which latter the parts 19 and 20 are pivotally connected as in the examples shown in Figs. 1 to 4.

In the operation of the embodiment shown in Figs. 9, 10 and 11, the case 6 is moved into its foremost position (in which it is shown in Figs. 10 and 11) when it is required that the lower faces 4 shall be presented at the composing level, for it is only when it occupies that position, that the ledge 14 can be projected into the downward path of the matrices 2. When it is required that the upper faces 3 shall be presented at the composing level, the case 6 is pushed into its rearmost position as shown in Fig. 9 (in which it is temporarily retained by the detent 34) and the ledge 14 is thereby moved with it into such a position that, although it will be projected forward by each depression of a key 7, its front edge will not extend into the path of the matrices, so that

the latter will fall on to the assembler bottom 12.

Instead of the case 6 and its connected parts being slidable with reference to the rods 10 and the face shifter and their connected parts, as in Figs. 5 to 8; the said shifter, and parts may be movable from back to front and vice versa with reference to the case 6 and its connected parts, and instead of the case 6 being moved together with the rods 10 and parts 14; 19, 20, relatively to the assembler 11, as in Figs. 9, 10 and 11, the reverse of this arrangement can obtain.

15 Having described our invention, we claim and desire to secure by Letter Patent:—

1. In a typographical composing machine the combination with an assembler for receiving matrices in order of composition and a matrix-escapement and key adapted to control the delivery of the matrices to the assembler, of an adjustable face shifter adapted to support matrices above the lowest position in the assembler and to be operated or not by the depression of the key at the will of the operator.

2. In a typographical composing machine, the combination with an assembler for receiving matrices in order of composition, and a matrix-escapement and key adapted to control the delivery of the matrices to the assembler, of a ledge capable of being moved into and out of the path of the matrices entering the assembler, and adjustable means operatively connected with the key adapted to operate the ledge simultaneously with the operation of the key at the will of the operator.

3. In a typographical composing machine, the combination with an assembler for receiving matrices in order of composition, and a matrix-escapement and key adapted to control the delivery of the matrices to the assembler, of a ledge capable of being moved into and out of the path of the matrices entering the assembler, ledge-moving devices adapted to move the ledge into and out of the said path, and adjustable means whereby the operation of the key shall or shall not be caused to operate the ledge.

4. In a typographical composing machine, the combination with an assembler for receiving matrices in order of composition, and a matrix-escapement and key adapted to control the delivery of the matrices to the assembler, of a ledge movable into and out of the path of the matrices entering the assembler, a lever in operative connection with the ledge, and means whereby the key may be moved into and out of operative connection with the said lever.

5. In a typographical composing machine, the combination with an assembler for receiving matrices in order of composition, and a matrix-escapement and key adapted to

control the delivery of the matrices to the assembler, of a ledge movable into and out of the path of the matrices entering the assembler, a lever operatively connected with the ledge, a push rod adapted to operate the lever, and means whereby the key may be moved into and out of operative connection with the push rod.

6. In a typographical composing machine, the combination of an assembler for receiving matrices in order of composition, a matrix-escapement and key lever adapted to control the delivery of the matrices to the assembler, the key lever being longitudinally movable on its fulcrum, a ledge movable into and out of the path of the matrices entering the assembler, a lever operatively connected with the ledge and a push rod adapted to operate the lever and to be operated by the key lever when the latter, in one of its terminal longitudinal positions, is depressed by the operator and to be missed by the key lever when the latter, in its other terminal position, is depressed by the operator.

7. In a typographical composing machine the combination of matrices each having plural characters, mechanism for releasing the individual matrices that they may pass to the line in course of composition, means for determining the height of each matrix in the line in order that one character or the other may appear at the composing level, and a single key arranged to actuate the matrix releasing mechanism and also to control the mechanism for determining the height of the matrices and connections between said key and the releasing mechanism and height determining means, whereby the actuation of the single key is caused to deliver the designated matrix to the line at one height or another as demanded.

8. In a composing mechanism of the class described, matrices each having plural characters, a series of escapement mechanisms controlling the delivery of these matrices toward the composed line, common mechanism to determine the longitudinal position of each matrix in the line and a series of finger-keys to operate the respective escapements, together with connecting means whereby the common positioning mechanism may be actuated with the escapement mechanism or not, at the will of the operator.

9. In a composing mechanism of the class described, matrices each having two characters, escapement devices for delivering said matrices toward the composed line, a stationary support to maintain the matrices at one level in the composed line, movable means to maintain the matrices at another level in the line, and a single finger-key arranged to operate the escapement devices and also to operate the movable matrix sustaining devices at the will of the operator.

10. In a composing mechanism of the class

described, a finger key movable endwise into different positions at the will of the operator, in combination with the matrix releasing mechanism in constant connection with said key, and a matrix leveling mechanism in connection with the key when the latter is in one endwise position but not when it is in the other.

11. In a machine of the class described, a matrix escapement device and mechanism for determining the individual heights of the matrices in the assembling line, together with a single actuating means and connections between said actuating means and the escapement device and height determining mechanism, whereby the escapement device may be operated in connection with or independently of the operation of the height

determining mechanism, at the will of the operator.

12. In a typographical composing machine, the combination of plural letter matrices, escapement devices therefor, and escapement operating means, with means for determining the height of the matrices in the line, and adjustable connections therefrom to the escapement operating means to permit their actuation at the will of the operator.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

CARL MUEHLEISEN.

CHRISTIAN AUGUSTUS ALBRECHT.

Witnesses:

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WOLDEMAR HAUPT.