No. 771,161. PATENTED SEPT. 27, 1904.

P. C. LAWLESS.

MULTIPLE MAGAZINE LINOTYPE MACHINE.

APPLICATION FILED DEC. 21, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

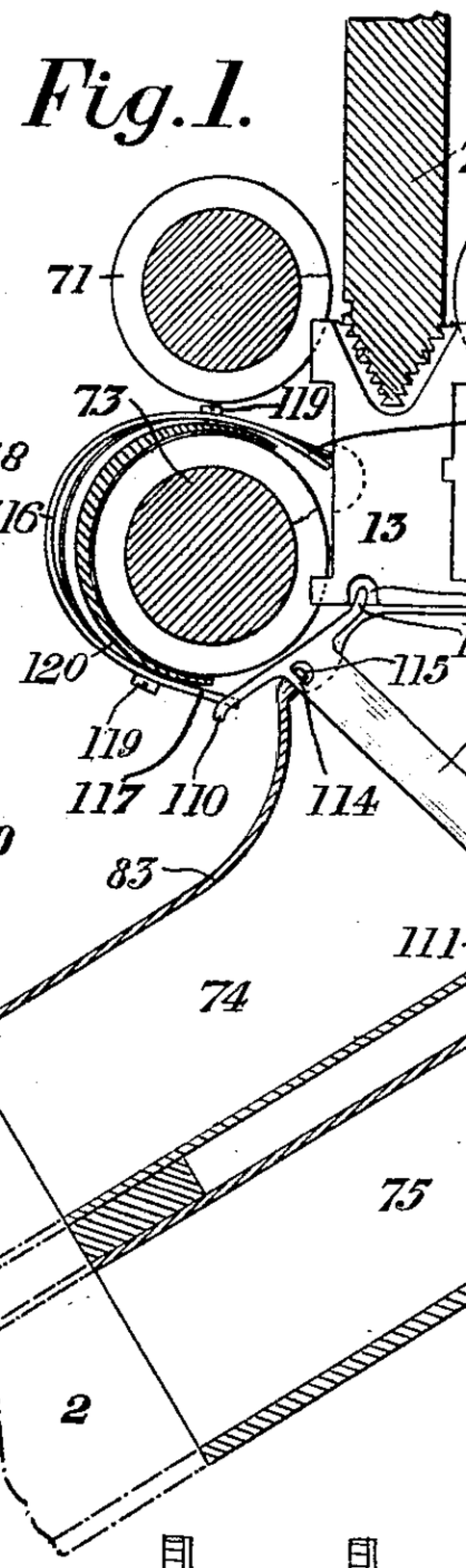


Fig. 2.

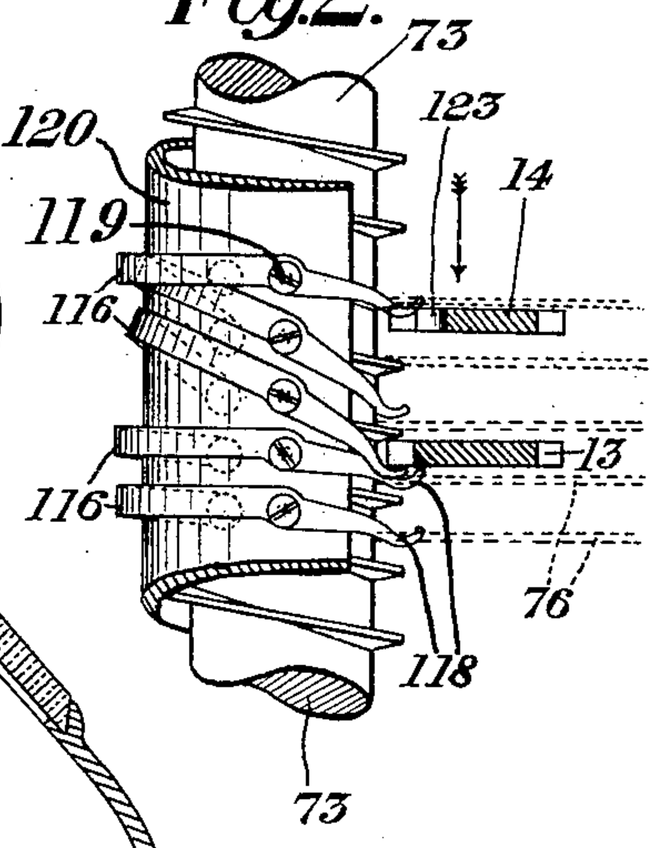


Fig. 4.

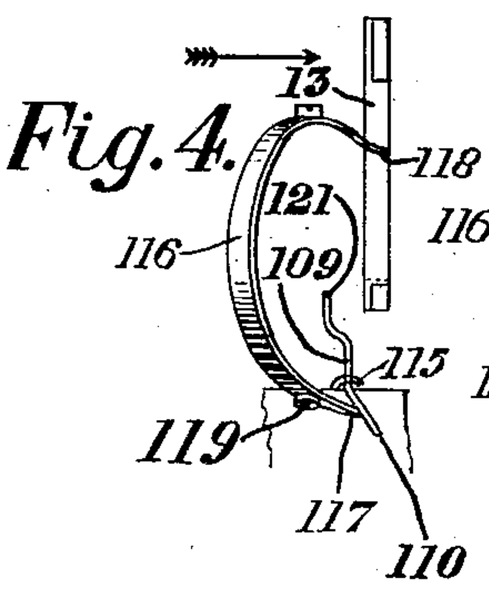


Fig. 5.

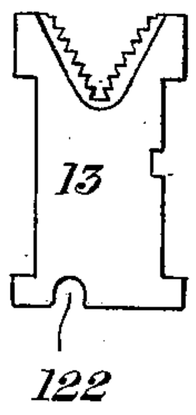


Fig. 6.

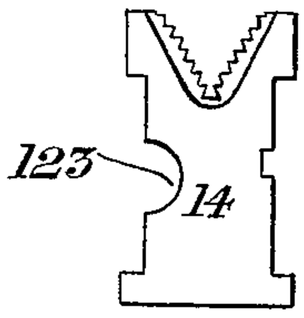
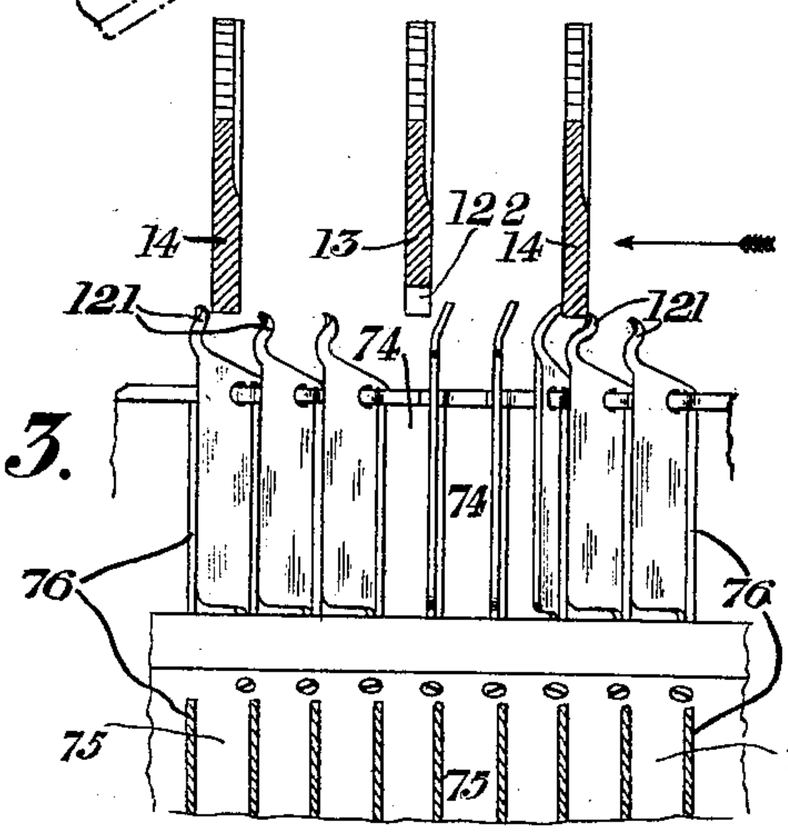


Fig. 3.



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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 7.

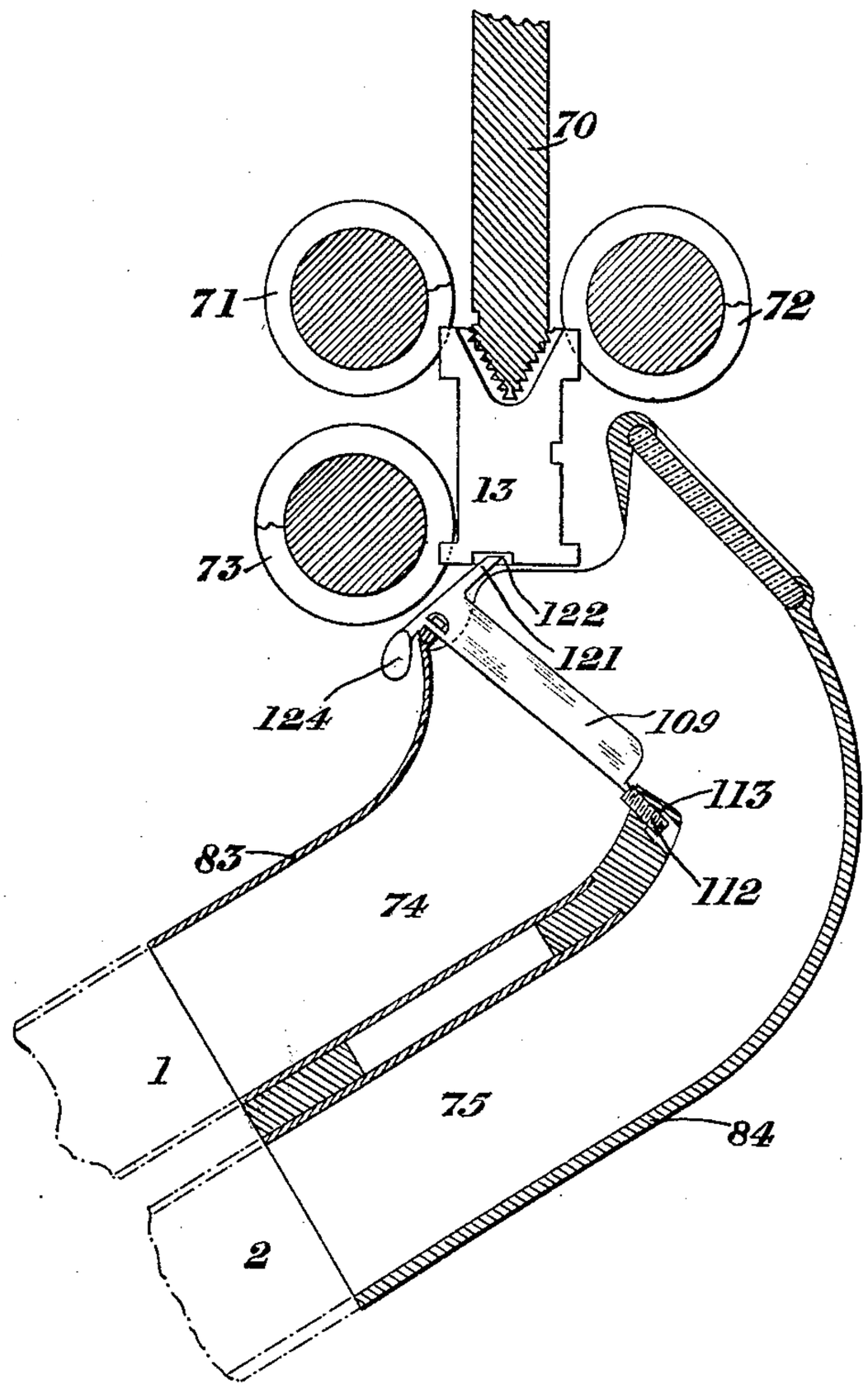
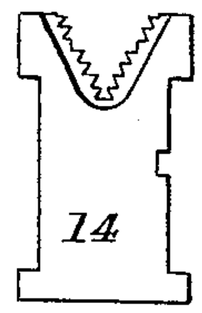


Fig. 8.



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MULTIPLE MAGAZINE LINOTYPE MACHINE.

APPLICATION FILED DEC. 21, 1903.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 10.

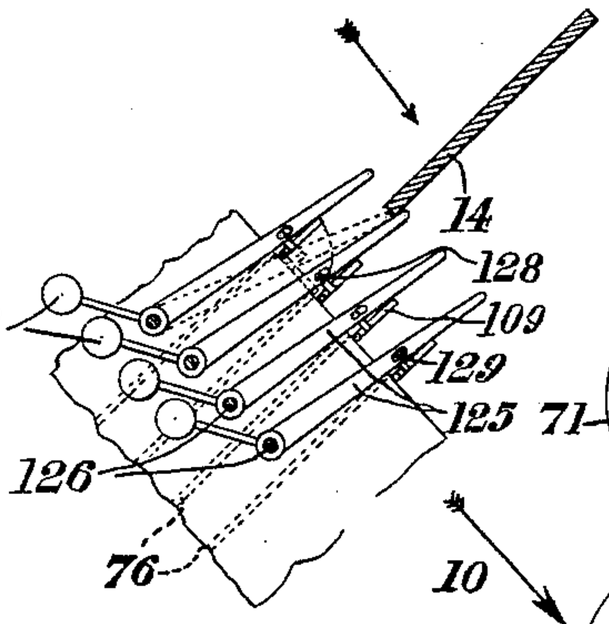


Fig. 11.

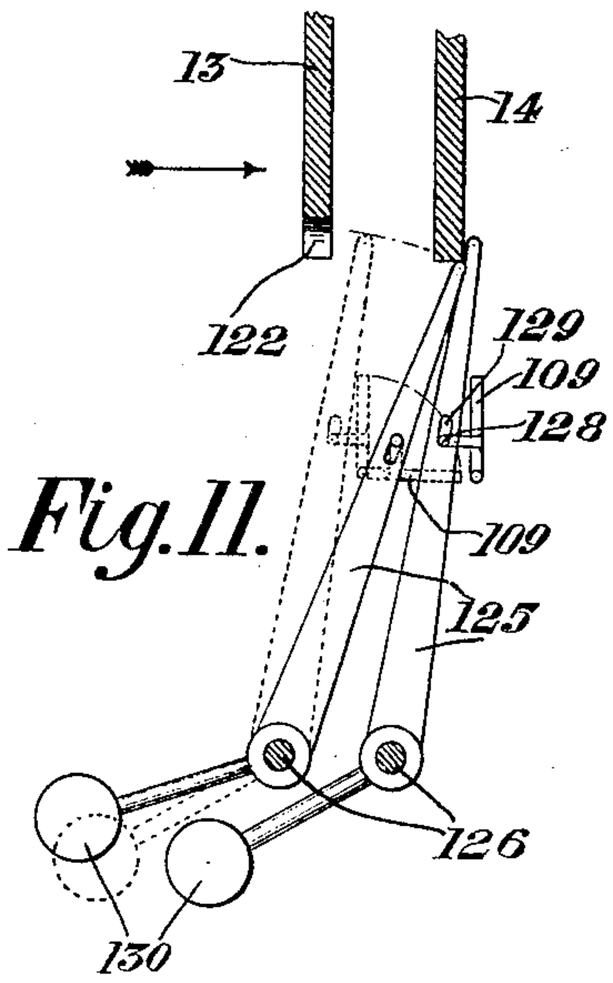
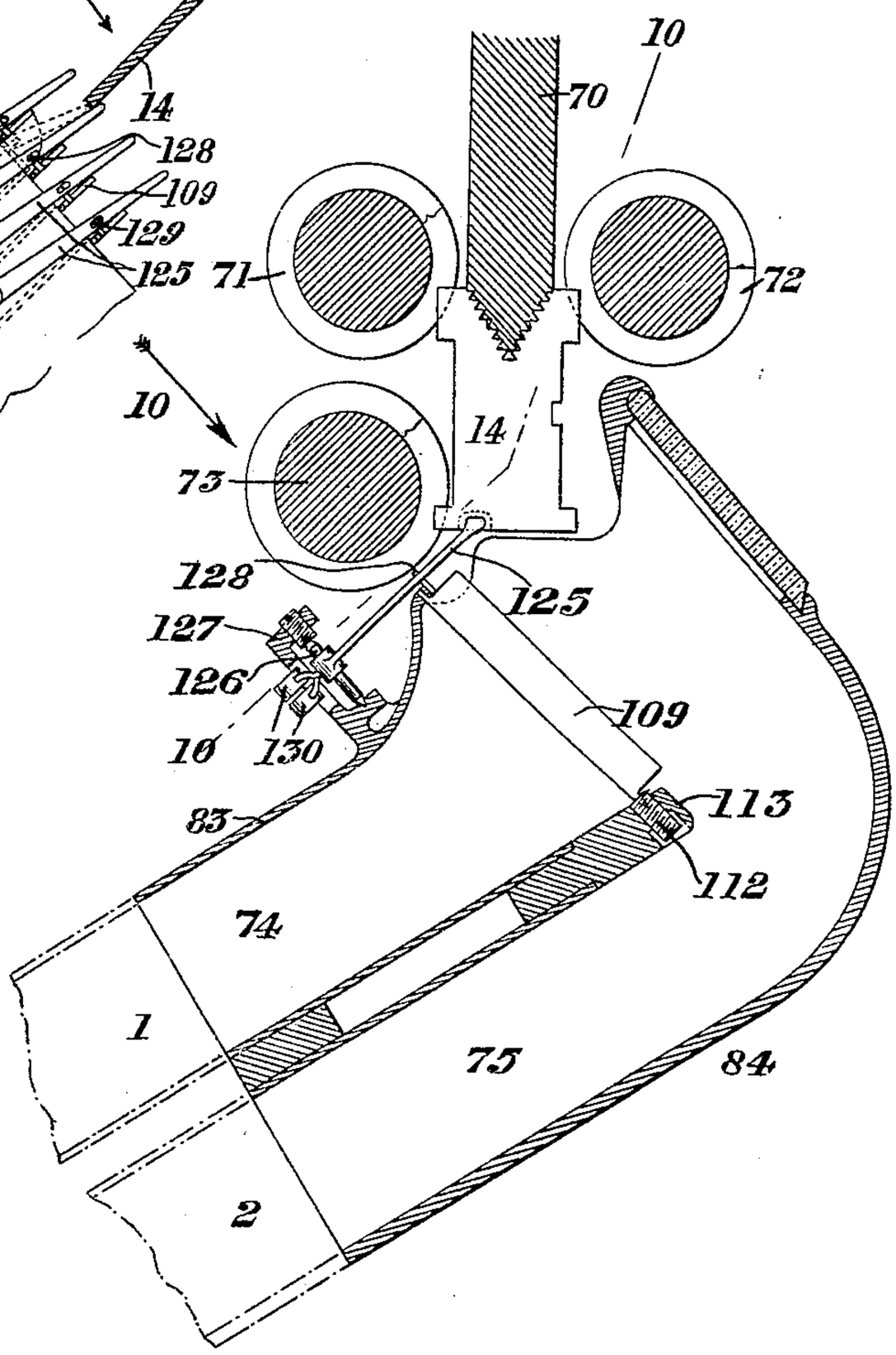


Fig. 9.



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No. 771,161. Patented September 27, 1904.

UNITED STATES PATENT OFFICE.

PHILIP C. LAWLESS, OF LONDON, ENGLAND.

MULTIPLE-MAGAZINE LINOTYPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 771,161, dated September 27, 1904.

Application filed December 21, 1903. Serial No. 186,082. (No model.)

To all whom it may concern:

Be it known that I, PHILIP C. LAWLESS, of 188 Fleet street, in the city of London, England, have invented certain new and useful Improvements in Multiple-Magazine Linotype-Machines; 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.

The present invention relates to improvements in the Mergenthaler linotype-machine described in the specification of Letters Patent No. 436,532, dated September 16, 1890, when it is equipped with two stationary magazines, one charged with the normal—say Roman—and the other with a variant—say italic—font. It consists in improved means for enabling the matrices while being moved along by the distributer-screws to automatically control the entrances to the magazines, so that the normal and variant matrices will be allowed to fall only into the normal and variant magazines, respectively.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of part of a linotype-machine constructed according to the present invention, the section being taken on a plane extending from front to back of the machine. Fig. 2 is a plan of a part of Fig. 1. Fig. 3 is a vertical section taken partly on the line 3 3 of Fig. 1. Fig. 4 is a front elevation of a part of Fig. 1. Figs. 5 and 6 are elevations of a normal matrix and variant matrix, respectively. Fig. 7 is a view similar to Fig. 1 of a modified construction of the apparatus. Fig. 8 is an elevation of one of the variant matrices of or appropriate to the apparatus shown in Fig. 7. Fig. 9 is a view similar to Fig. 1 of a further modification. Fig. 10 is a sectional view taken on the line 10 10 of Fig. 9 as seen in the direction indicated by the arrow 10 in the latter figure, and Fig. 11 is an enlarged detail view showing the operation of this further modification.

The two magazines 1 2 (of which only small portions are shown in dotted lines in Figs. 1, 7, and 9) lie one upon or a little above the other, (the magazine 1 being uppermost,) and the composed line of normal and variant font matrices 13 14 is delivered thereto by falling from the usual V-shaped toothed and permuted distributer-bar 70, along which in the well-known manner it is moved by the usual distributer-screws 71 72 73. For each of the magazines 1 2 there is provided an independent throat, which is divided by vertical partitions 76, Figs. 2 and 3, into separate channels or divisions 74 75, respectively.

For facilitating the description and understanding of the invention the magazines 1 and 2 are herein regarded as containing matrices of the normal and variant fonts, respectively, and are accordingly referred to as the "normal" and "variant" magazines, respectively, the matrices 13 and 14, adapted to be contained in these magazines, being herein correspondingly regarded and referred to as the "normal" and "variant" matrices, respectively. It will, however, be obvious that the reverse of this arrangement may be equally well provided for in actual practice.

Each channel or division 74 of the throat appropriated to the normal matrices 13 is in the same vertical plane as the channel or division 75, appropriated to the corresponding character of the variant font, and each channel 74 is provided with a hinged or pivoted door 109, adapted to close or be automatically closed when a variant matrix is about to fall from the distributer-bar 70 and to open or be automatically opened when a normal matrix is about to fall from the distributer-bar.

In the arrangement shown in Figs. 1, 2, 3, and 4 each of the doors 109 presents a forwardly-projecting ear 110 and is pivotally mounted by the following means: The lower pointed end of its pivot 111 is centered in a screw 112, adjustable in a bar 113, situated between the two throats or sets of throat divisions 74 75, and at its upper part the door is perforated to form below such perforation what is virtually a short rocking shaft 114, which is retained in rocking contact with the upper edge of the front plate 83 of the throat 74 by a hook or strip 115, bent down over the said shaft 114, as shown most clearly in

Fig. 4. For each of the doors 109 there is a bent pivoted lever 116, having one end 117 next to the ear 110 of that door and its opposite end 118 projecting rearward into the path of the front edges of the matrices 13 14 as they are moved along the distributer-bar 70. The levers 116 are fulcrumed upon two screws 119, fixed in a bent plate 120, supported by the fixed machine-frame in front of the bottom front distributer-screw 73. Each door 109 has a finger 121, which when the said door is open stands up in the path of the feet of the matrices 13 and 14 as these latter are moved along the distributer-bar 70, as shown in Figs. 1 and 3. Each normal matrix 13 (see particularly Fig. 5) has a gap 122 in its foot to clear the fingers 121, standing in its path, and each variant matrix 14 (see particularly Fig. 6) has a gap 123 in its front edge to clear all the lever ends 118 standing in its path. Each lever 116 in the position corresponding with the closed position of the appropriate door 109 projects forward from the bent plate 120 in a plane substantially perpendicular to the axis of the distributer-screw 73, and this position is hereinafter termed its "perpendicular" position, and in the position corresponding with the open position of the door 109 projects forward in an inclined position, and this position is hereinafter termed its "inclined" position. In Fig. 2 five levers 116 are shown, three in their perpendicular positions and two in their inclined positions, while the single lever shown in Fig. 4 is represented in its inclined position. Each lever 116 is adapted to remain in either of its two terminal positions, corresponding, respectively, with the open and shut positions of the corresponding door 109, either by having its pivotal axis (constituted by the before-described screws 119) inclined from the vertical, as shown in Fig. 1, or by being fitted with a suitable retaining device, such as a weight or spring. Thus any matrix may find the door 109 of its particular throat division either open or shut. If it is a normal matrix 13 and the door 109 is open, it has not to open it, and its gap 122 passes over the then upstanding finger 121 of the door without affecting the latter, and the said matrix forthwith drops through the open doorway into the throat 74, that leads to the normal magazine 1. If it is a variant matrix 14 and the door is open, the ungapped foot of the said matrix engages the then upstanding finger 121, as indicated in relation to the two outer matrices 14, (represented in Fig. 3,) and thereby shuts the appropriate door 109 (also moving the corresponding lever 116 to its perpendicular position) and drops over the said door into the throat 75, leading to the variant magazine. If the variant matrix 14 finds the door 109 under it closed, its front gap 123 clears the lever end 118, and it finds no upstanding finger 121 in its path and drops, as just explained, first onto the door 109 and thence into the throat 75, leading to the variant magazine. If a normal matrix 13 finds the door 109 of its throat division shut, its ungapped front edge engages the lever end 118, as shown in Fig. 3, and through the lever end 117 and ear 110 of the door opens the said door and drops through the doorway thus opened, the lever 116 then being left in its inclined position, in which position its end 118 is completely withdrawn from the path pursued by the matrices supported by the distributer-bar 70. The arrows adjacent to the matrices in Figs. 2, 3, and 4 indicate the direction in which the said matrices are moved by the distributer-screws 71, 72, and 73.

According to the modification shown in Figs. 7 and 8, the before-described levers 116, gaps 123 in the fronts of the variant matrices 14, and the ears 110 are dispensed with, and the last-named of these devices are replaced by weights 124, one on each door 109, to keep it normally open. The normal matrices 13, Fig. 7, are provided with gaps 122 in their feet, as in the before-described arrangement; but the variant matrices 14, Fig. 8, have no such gaps. When, therefore, a normal matrix arrives over its appropriate magazine-division, it finds the door 109, corresponding thereto, open, and by its gap 122 it misses the then upstanding finger 121 and falls through the open doorway directly into the throat 74. When a variant matrix 14 arrives over its appropriate magazine-division, it also finds the door carresponding thereto open and has to close it, which it does by engaging (with its ungapped foot) the then upstanding finger 121, the said matrix falling onto the thus-closed door and thence into the throat 75. As soon as the variant matrix falls off the door 109 the returning device or weight 124 returns the latter to its open position.

Instead of the doors 109 being formed integral with the fingers 121, as in Figs. 1, 3, and 4, and integral with the returning devices 124, as in Fig. 7, these fingers and returning devices may be separate from the doors. Figs. 9, 10, and 11 are an example of one such arrangement. In this construction of the apparatus the fingers 125 are constituted by levers fulcrumed by arbors or short shafts 126 below the level of the row of doors 109 and conveniently in brackets or in one continuous bracket 127, Fig. 9, fast upon or in front of the top magazine-throat 74. Each door 109 is connected to its respective finger or lever 125 by a crank-pin 128, projecting from the said door, engaging with a slot 129 in the said finger or lever 125. The normal position of the doors 109 is their open position, and the fingers or levers 125 are provided with counterweights 130 or other devices for returning the said doors to these positions after they have been closed by the variant matrices.

The operation of this last-described arrange-

ment is substantially the same as that of the apparatus shown in Fig. 7, the variant matrices 14 effecting the closing of the doors 109 by their ungapped feet acting on the fingers or levers 125, as indicated in Fig. 11, wherein in full lines the left-hand finger is shown swung over by the variant matrix 14 and the door 109, connected with that finger, is shown closed. The dotted lines in this figure show the same finger and door in their respective normal positions.

I claim—

1. In a linotype-machine the combination of the distributer-screws, toothed distributer-bar, two fonts of matrices, two magazines, one for each font of matrices, pivoted doors at the entrances to the channels of one of the magazines, arms in operative connection with the doors and projecting into the path of the matrices supported on the distributer-bar, and notches in the matrices of one of the fonts to clear the said arms.

2. In a linotype-machine the combination of the distributer-screws, toothed distributer-bar, two fonts of matrices, two magazines, one for each font of matrices, pivoted doors at the entrances to the channels of one of the magazines and vertically beneath the matrices as they fall from the distributer-bar, operative arms in operative connection with the doors and projecting into the path of the matrices supported on the distributer-bar, and notches in the matrices of one font, to clear the operative arms.

3. In a linotype-machine the combination of the distributer-screws, toothed distributer-bar, two fonts of matrices, two magazines, one for each font of matrices, pivoted doors at the entrances to the channels of one of the magazines, operative arms projecting into the path of the matrices supported on the distributer-bar, cranks on the doors engaging the operative arms, notches in the matrices of one font, to clear the operative arms, and weights on the said arms to normally hold the doors open.

4. In a linotype-machine the combination of the distributer-screws, toothed distributer-bar, two fonts of matrices, two magazines, one for each font of matrices, a throat between the distributer and the magazines, through which the matrices pass, and doors adjustable in the said throat, which doors in one position direct the matrices into one of the magazines and in a second position allow the matrices to enter the other magazine.

5. In a linotype-machine the combination of the distributer-screws, toothed distributer-bar, two fonts of matrices, two magazines, one for each font of matrices, a throat between the distributer and the magazines, through which the matrices pass, doors adjustable in the said throat at the entrances to the channels of one of the magazines, operative arms in operative connection with the doors and projecting into the path of the matrices supported on the distributer-bar, and notches in the matrices of one font to clear the operative arms.

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

PHILIP C. LAWLESS.

Witnesses:

WARWICK HY. WILLIAMS,

WALTER J. SKERTEN.