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MATRIX SELECTING AND DELIVERY MECHANISM FOR COMPOSING MACHINES.

APPLICATION FILED JULY 6, 1909.

991,938.

Patented May 9, 1911.

Fig. 1.

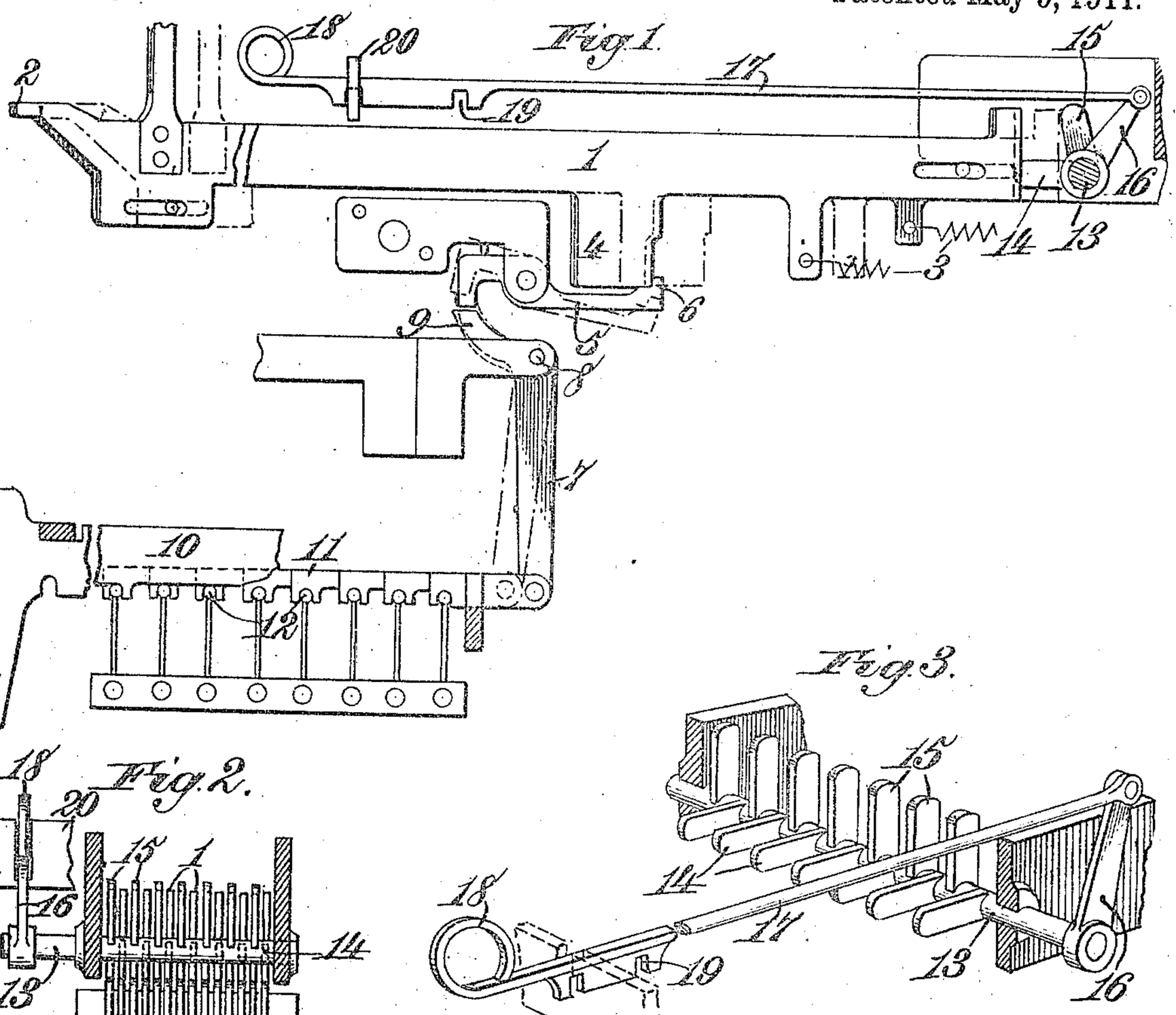


Fig. 2.

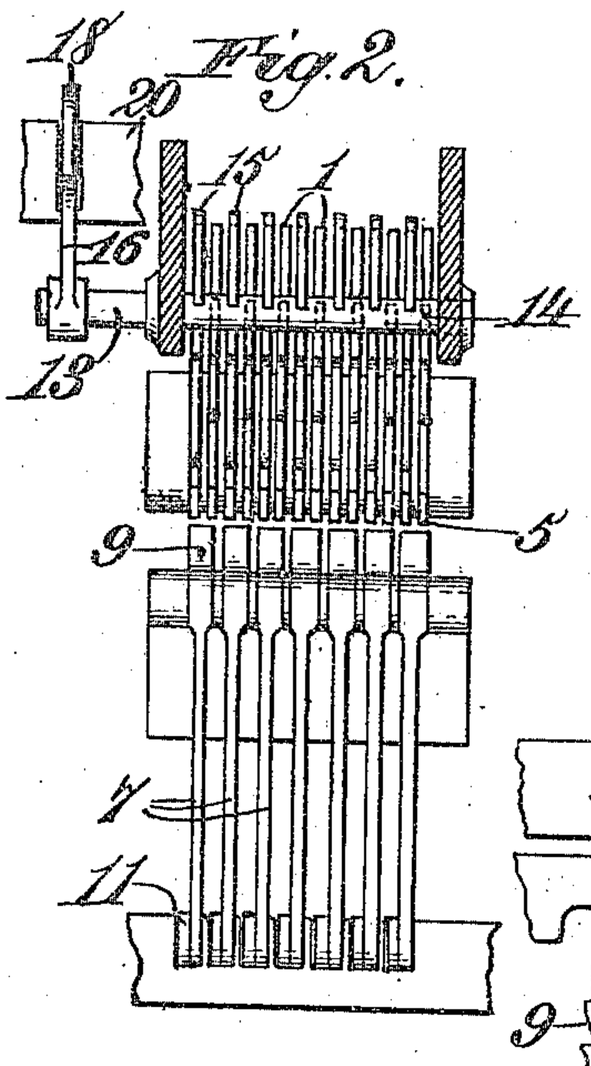


Fig. 3.

Fig. 4.

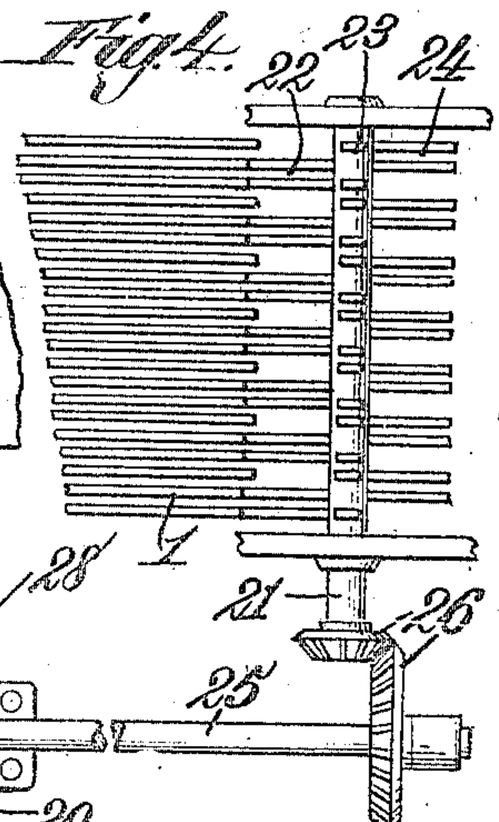


Fig. 5.

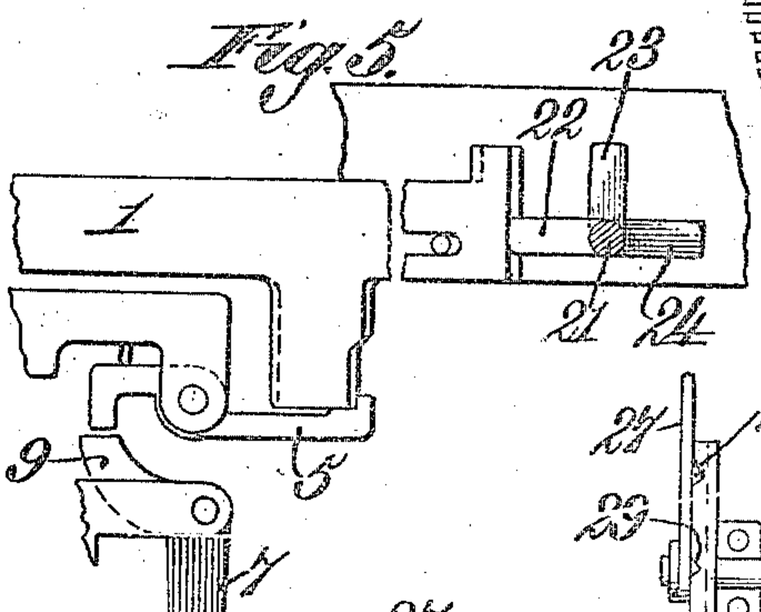
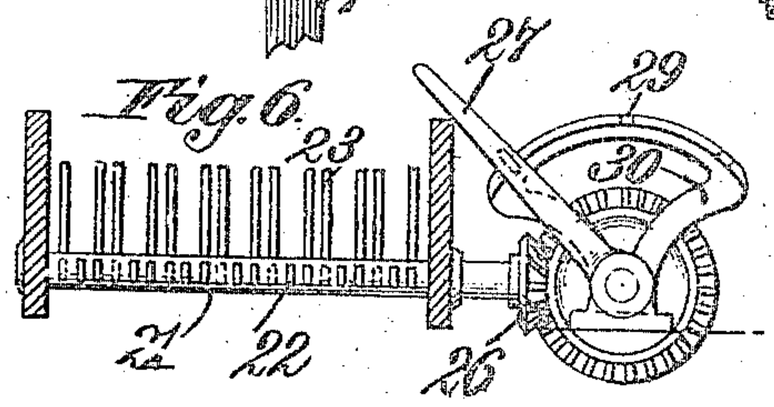


Fig. 6.



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MATRIX SELECTING AND DELIVERY MECHANISM FOR COMPOSING-MACHINES.

991,938. Specification of Letters Patent. Patented May 9, 1911.

Application filed July 6, 1909. Serial No. 506,088.

To all whom it may concern:

Be it known that I, WILLIAM ERNEST BERTRAM, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Matrix Selecting and Delivery Mechanism for Composing-Machines, of which the following is a specification.

My present invention relates to improvements in monoline composing machines, and it is more particularly applicable to machines of the type wherein matrices bearing appropriate characters are selected and assembled, preparatory to the casting of a line of type matter therefrom, and it has for its object to provide novel and efficient means whereby the capacity of the machine may be greatly increased by providing for the use of a plurality of fonts of matrices any one of which fonts may be selected and brought into use by the operator, the font or fonts not in use being held in an inactive condition, and this result is accomplished by the present invention without the necessity of removing one font of matrices from the machine and substituting another therefor so that a change from one font to another can be made quickly and with facility.

A further object of the invention is to provide an improved delivery and font selecting mechanism combined with a matrix magazine or storing means which is capable of containing two or more fonts of matrices whereby the objects above described may be effectually accomplished, the mechanism involving relatively few parts and it is capable of operating rapidly and with certainty.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing: Figure 1 represents in side elevation, a font selecting and delivery mechanism of a monoline composing machine constructed in accordance with the present invention; Fig. 2 is an elevation of the parts shown in Fig. 1 as viewed from the right hand side; Fig. 3 is a perspective view showing a device for selecting one font of matrices and locking another font of matrices in an inactive condition; Fig. 4 is a plan view showing the rear ends of the delivery gates and a selecting and locking device whereby three different fonts may be combined in the same machine and any one of the fonts may be selected for use; Fig. 5 represents a side elevation of Fig. 4 with parts broken away; and Fig. 6 represents a front view of the construction shown in Fig. 4.

Similar parts are designated by the same reference characters in the several views.

In the accompanying drawing, I have shown certain embodiments of the invention which may be used to especial advantage in monoline composing machines of the type disclosed in Letters Patent, No. 605,141 granted June 7, 1898. It will be understood, however, that those forms of the invention shown in the drawing and to be particularly described in the present specification are given as examples, it being understood that certain modifications and changes may be made in the mechanism in order that the invention may be applied to the best advantage in each particular case.

The present invention relates especially to the font selecting and matrix delivery mechanism and it is, therefore, deemed sufficient to illustrate this particular part of the machine, the general construction of the monoline machine as disclosed in the Letters Patent above mentioned being well known to those skilled in the art. According to the present invention, the magazine or storage chamber is provided with channels each of which contains matrices of the same specie. In order, however, to increase the capacity of the machine to such an extent as to per-

mit the use of two or more fonts of matrices, the magazine or storage chamber will be provided with multiple sets of channels agreeing in number to the number of fonts it is desired to employ. In the present embodiments of the invention, seven specie of matrices are employed for each font, there being fourteen matrix-receiving channels in the magazine in case two fonts are to be used and, in using three fonts, twenty-one matrix-receiving channels will be employed. Obviously, the invention is not limited to the number of fonts that can be used, as the capacity of the magazine can be increased in order to accommodate the additional fonts of matrices and, as will be hereinafter described, the selecting and delivery mechanism for the matrices can be readily adapted to accommodate different numbers of fonts.

In that form of the invention shown in the accompanying drawing, a delivery-gate 1 is shown which is of the type disclosed in the Letters Patent aforementioned, this gate being guided to reciprocate and is provided on its forward end with a shelf 2 which controls the opening through which the matrix bars pass from the respective channels of the magazine to the assembling point, this shelf when the gate is in its normal forward position serving to close the delivery passage from the magazine. One of these gates is provided for each matrix channel of the magazine, and a spring 3 acts upon each gate tending to retract or open it, these several gates being individually operative.

Each gate has a controlling projection 4 which in the instance shown depends therefrom, and a detent 5 is provided for controlling the retracting or opening movement of the gate under the action of its spring. In the present instance, the detent or pawl 5 is pivoted at a point intermediate its ends to a suitable part of the machine whereby this detent or pawl may have a rocking movement. One end of the detent is provided with a dog 6 which is arranged to engage behind or coöperate with the controlling projection on the gate and thereby detain the latter in a closed position, a rocking movement of the detent, however, serving to free the dog from the controlling projection on the gate and thereby permit the latter to quickly open under the action of its actuating spring. One of these detents is provided for each delivery gate.

The delivery of the matrices from the magazine in this type of composing machines is controlled by a key-board which is manipulated by the operator, and suitable means is provided for releasing the appropriate detents and consequently the delivery of the matrices during the assembling thereof in a line, preparatory to the casting operation. According to the present invention, I employ a set of detent releasing levers 7 which preferably correspond in number to the number of specie of matrices for any one font. For example, in the present embodiments of the invention there are seven specie of matrices and it will be sufficient to employ seven detent releasing levers, although a plurality of fonts may be used. According to the present invention, however, each detent releasing lever serves to release preferably a number of detents corresponding to the number of fonts of matrices with which the magazine is supplied. In the construction shown, each detent lever is pivoted or fulcrumed at a point intermediate its length to a suitable part of the machine so as to turn about the axis 8, and one end of this lever, the upper end in the present instance, is formed into an arm 9. This part of the detent lever serves to release the detents and, in that form of the invention shown in Figs. 1–3 inclusive, it is of a width sufficient to engage and release two adjacent detents, this form of the invention being adapted to operate with two fonts of matrices. Each detent lever is operated in an appropriate manner from the key-board which it is considered unnecessary to illustrate. In the present instance, each detent lever is connected to a stop-controlling slide 10 which is thrown forwardly in the usual manner by the manipulation of the corresponding key of the key-board, each of these slides being connected to their respective detent levers by links 11 and the appropriately arranged bail rods 12.

It has been previously indicated that when two fonts of matrices are provided for in the magazine, each detent lever will simultaneously release two detents. In order, however, to permit the delivery of a matrix from one font and to prevent the delivery of a matrix from the other font, I provide a font selecting and delivery controlling device which in the present embodiments of the invention acts to lock the gates for the font not in use. In that form of the invention shown in Figs. 1–3 inclusive, this font selecting and delivery controlling device comprises a rock shaft 13 which preferably extends transversely and at a suitable distance from the rear ends of the delivery gates, and this shaft is provided with two series of locking arms or projections 14 and 15, these arms proceeding from the shaft in different angular directions and, moreover, they are arranged in alternating relation and are spaced so as to agree with the spacing of the delivery gates. The arms 14 and 15 are preferably of such a length that when the shaft 13 is turned so as to bring either set or series of arms into locking engagement with the rear ends of the delivery gates, such gates as are engaged by these arms will be pushed forwardly into the dotted line position shown in Fig. 1, the

rear edge of the controlling projection 4 on the locked or detained gates being pushed forward to provide a clearance that will insure a reëngagement of the dog 6 of the respective detent when the latter returns to its normal locked position. When one series of locking or controlling arms is in locking engagement with the delivery gates of one font, the other series of locking or controlling arms occupy such a position as to permit the delivery gates of another font to move into the dot-and-dash position in Fig. 1, thereby permitting the delivery of a matrix from the magazine.

By rotating the shaft 13, either series of locking or controlling arms may be brought into operative position and, owing to the alternating relation of these arms and the corresponding arrangement of the delivery gates with reference to the fonts of matrices, a quick change from one font to another can be made. Different devices can be provided for operating the font selecting and controlling device whereby the same may be conveniently manipulated by the machine operator. In the present instance, I have shown the shaft 13 as provided with a crank arm 16 to which a rod 17 is attached, this rod having a suitable handle 18 whereby it may be manipulated, and it is also provided with a number of notches 19 corresponding to the number of fonts that may be contained at one time in the magazine, these notches being arranged to coöperate with a suitable locking plate 20 and, moreover, these notches are so positioned that the machine will be in condition to operate with one or another font according to which notch is in locking position.

The present invention provides a font selecting and delivery mechanism for machines of this class whereby different numbers of fonts may be easily provided for. For example, in Figs. 4, 5 and 6, I have shown means whereby three different fonts may be combined in the same machine and the machine may be quickly set to operate with any one of the fonts. In this instance, there are twenty-one delivery gates to correspond with twenty-one matrix-receiving channels of the magazine, there being for instance seven different specie of matrices to each font, the matrices of similar specie, but of the different fonts, being arranged adjacent to one another. In this instance, those portions of the detent releasing levers are widened so that each detent lever may simultaneously release three adjacent detents, and the rock shaft 21 which is similar to the rock shaft 13 in the two-font arrangement is provided with three series of gate controlling arms 22, 23 and 24 arranged in suitable angular relation, as shown in Fig. 5. Each series of arms on the shaft 21 is of such a number and arrangement that when brought into engagement with the rear ends of the corresponding delivery gates, all of the delivery gates of two of the fonts will be held from opening movement, while all of the delivery gates of the remaining or third font will be free to open when released by their respective detents. Any suitable means may be provided for rotating the shaft 21 whereby any one of the three series of arms may be brought into action. In the present instance, I have shown a shaft 25 which is connected by gearing 26, preferably of increasing ratio, to the rock shaft 21, this shaft 25 being provided at a convenient point with an operating lever or part 27 which has suitable means for retaining it in any one of three positions, it being shown as having a dog 28 which may engage any one of a series of notches 29 formed in a sector 30.

The operation of the invention may be briefly described as follows: Assuming that the different specie of matrices of two or more fonts are arranged in alternating relation with the similar specie of matrices of the different fonts next to one another, and that the font selecting and locking device has been set so that the arms thereon engage and push forwardly the delivery gates of the font or fonts not in use, it will be understood that the delivery gates for the font which is to be used are free to open when properly released from the key-board. Upon manipulation of the key-board, the appropriate detent lever will operate to simultaneously release a number of pawls corresponding to the number of fonts which the magazine is adapted to contain, this detent lever releasing two pawls in the construction shown in Figs. 1–3 inclusive, while in the construction shown in Figs. 4–6 inclusive, each detent lever will simultaneously release three adjacent pawls or detents. The delivery gate which is not locked by the font selecting device will upon the operation of its respective detent immediately fly back under the action of its spring, thereby permitting the delivery of the selected matrix from the magazine, the gate or gates, however, which is or are locked by the font selecting device will be held in forward or closed position, although the detent or detents controlling such gates are released. By adjusting the font selecting device, obviously, any desired font contained in the magazine may be brought into use. The usual restoring means for the delivery gates, such as used in monoline composing machines of this class may be used for returning the gates to closed position.

The present invention provides simple and efficient means whereby the capacity of a composing machine may be increased to such an extent as to enable two or more fonts of matrices to be combined in the machine, any

one of which fonts may be quickly and easily brought into use by the operator without the delay and other objections incident to the removing of one font from the machine and the substitution therefor of another font as heretofore practiced, and the present invention is especially advantageous, as it only requires an increase in the capacity of the magazine to accommodate the additional font or fonts of matrices, and a corresponding widening of those portions of the detent levers which engage and release the detents, it being unnecessary to increase the number of detent levers, nor is it necessary to modify the key-board of the machine or its relative parts. The font selecting and controlling device also is of such a construction that certainty in the operation of the delivery gates, corresponding to the font of matrices in use, is insured while those not in use are positively held from operation and, moreover, the clearance provided between the delivery gates not in use and their respective detents insures a relocking of such gates by their respective detents during the change from one font to another font.

I claim as my invention:—

1. In a composing machine, the combination of a plurality of delivery gates capable of controlling the delivery of matrices of a plurality of fonts, detents coöperative with and individual to said gates, key-operated detent levers having means capable of releasing at one operation gates for a plurality of fonts, and a selecting device adjustable to permit delivery movement of the gates of any one selected font and to lock from delivery movement the remaining gates.

2. In a composing machine, the combination of a plurality of series of gates for controlling the delivery of matrices of different fonts, detents individual to said gates, means capable of releasing the detents for gates of different series, and a font selecting device operative to prevent delivery movement of all gates except those of the same series.

3. In a composing machine, the combination of a plurality of series of gates for controlling the delivery of matrices of different fonts, a series of gates being provided for each font of matrices, detents individual to said gates, key-operated detent levers each having means capable of releasing at one operation detents for gates of more than one series, and a font selecting device adjustable to prevent delivery movement of all gates except those of one selected series.

4. In a composing machine, the combination of a plurality of gates for controlling the delivery of matrices of different fonts, detents individual to said gates, key-operated means capable of releasing at one operation more than one of said detents, and a device for permitting delivery movement of the gates for one matrix font only.

5. In a composing machine, the combination of a plurality of gates for controlling the delivery of matrices of different fonts, controlling detents individual to said gates, and a detent lever capable of simultaneously engaging and releasing a plurality of detents.

6. In a composing machine, the combination of a plurality of gates for controlling the delivery of matrices of different fonts, detents individual to said gates, and a detent lever having a widened portion capable of simultaneously engaging and releasing a plurality of detents.

7. In a composing machine, the combination of a plurality of gates for controlling the delivery of matrices of different fonts, controlling detents individual to said gates and arranged adjacent to one another, and a detent lever common to a plurality of detents and having a widened portion capable of engaging and simultaneously releasing a plurality of detents.

8. In a composing machine, the combination of a plurality of matrix delivering gates, detents individual to said gates and arranged in adjacent relation, and a detent lever having a portion of a width to engage and simultaneously release a plurality of said detents.

9. In a composing machine, the combination of a plurality of series of gates for controlling the delivery of matrices of different fonts, detents individual to said gates, detent levers each having a portion of a width to engage and release detents for the gates corresponding to matrices bearing characters of the same kind but of different fonts, and a font selecting device capable of locking from delivery movement all gates except those for a single selected font.

10. In a composing machine, the combination of a series of delivery gates, detents individual to and coöperative with said gates for holding the same from delivery movement, and a locking device coöperative with the gate and capable of maintaining a clearance between said gate and its detent.

11. In a composing machine, the combination of a plurality of gates, detents individual to the gates, means for simultaneously releasing a plurality of said detents, and a selecting device capable of locking one of said gates from delivery movement and for maintaining a clearance between said gate and its respective detent.

12. In a composing machine, the combination of a plurality of series of gates for controlling the delivery of matrices of different fonts, one series of gates being provided for each font, detents individual to said gates, means capable of releasing simultaneously the detents for gates of difer-

ent series, and a font selecting device comprising an adjustable member having locking arms thereon corresponding to and adapted to coöperate with and lock gates of one series or the other according to the position of said member.

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

WILLIAM E. BERTRAM.

Witnesses:

CLARENCE A. BATEMAN,

ROBERT EVERETT.