

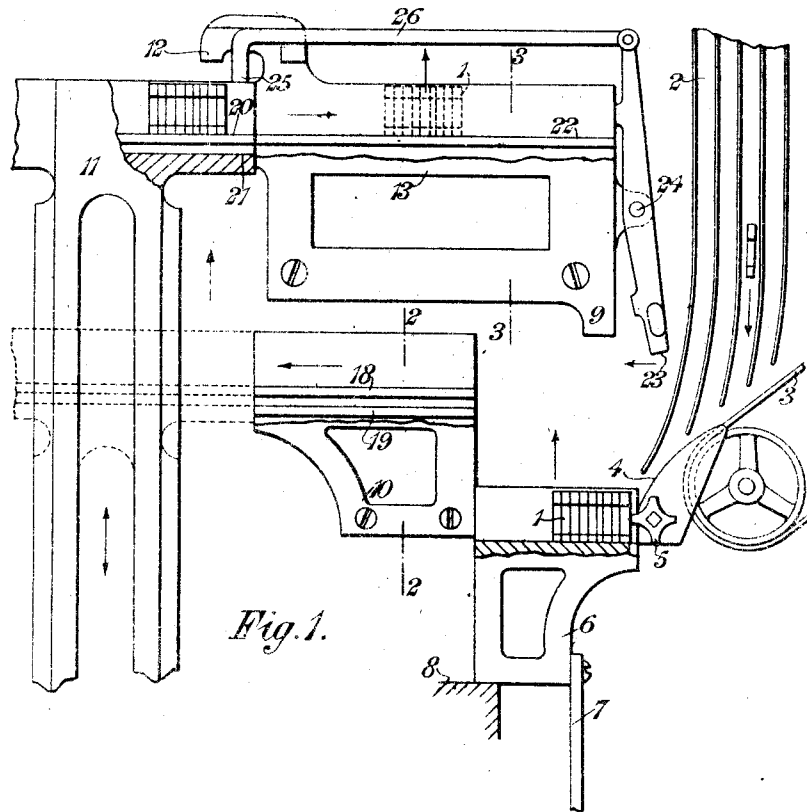


Fig. 1.

Fig. 2.

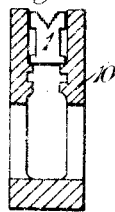
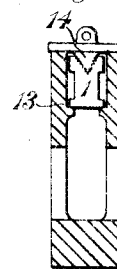


Fig. 3.



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 TYPOGRAPHICAL COMPOSING AND CASTING MACHINE.
 APPLICATION FILED OCT. 20, 1910.

1,066,032.

Patented July 1, 1913

5 SHEETS—SHEET 2

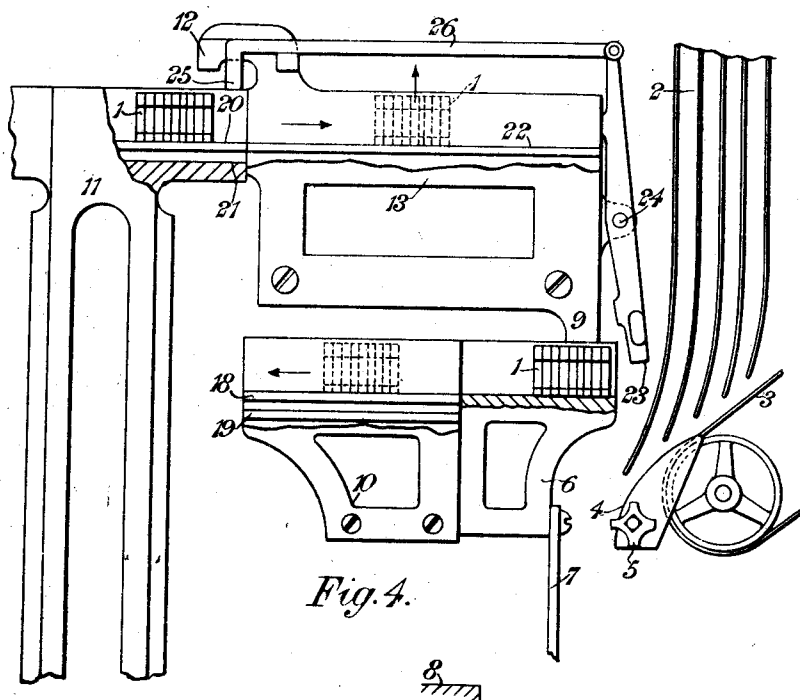


Fig. 4.

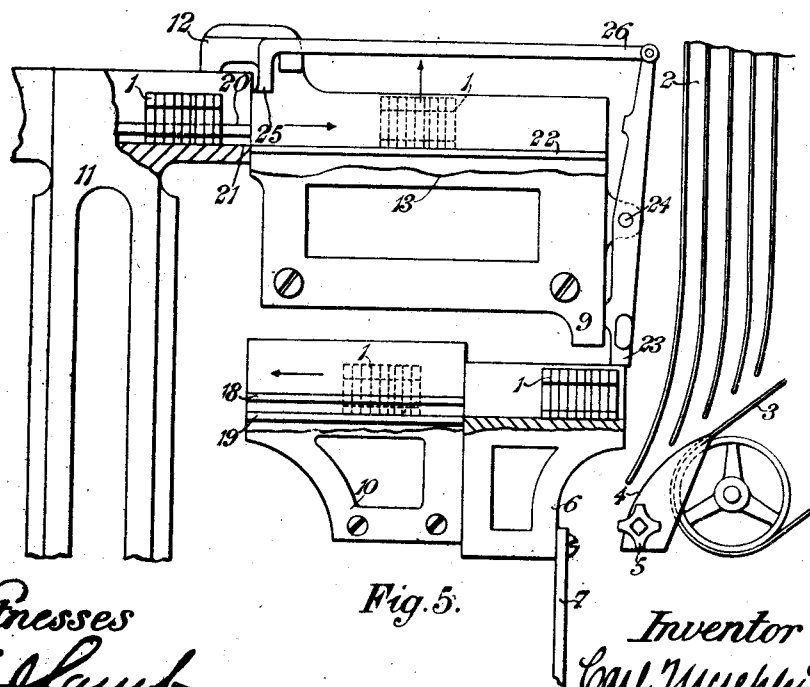


Fig. 5.

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5 SHEETS—SHEET 3.

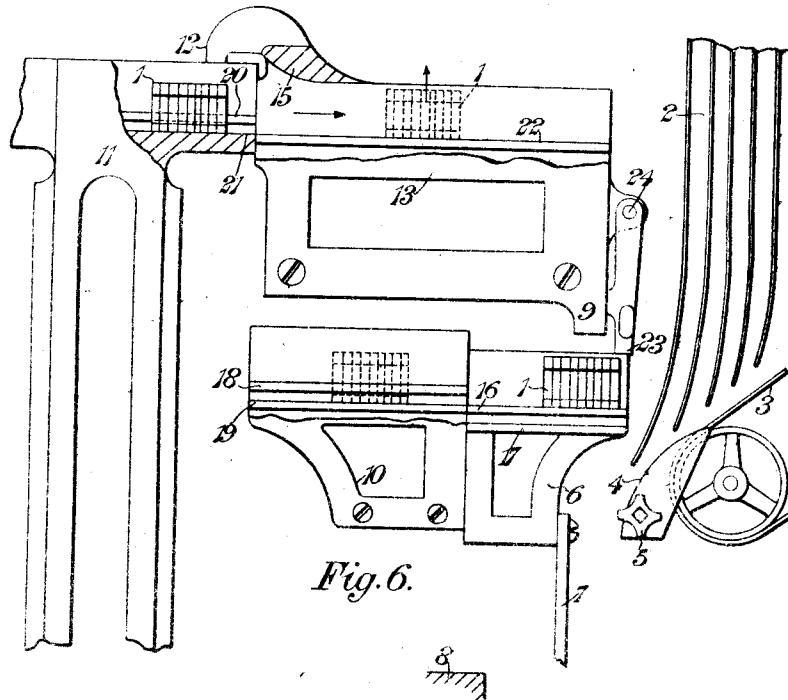


Fig. 6.

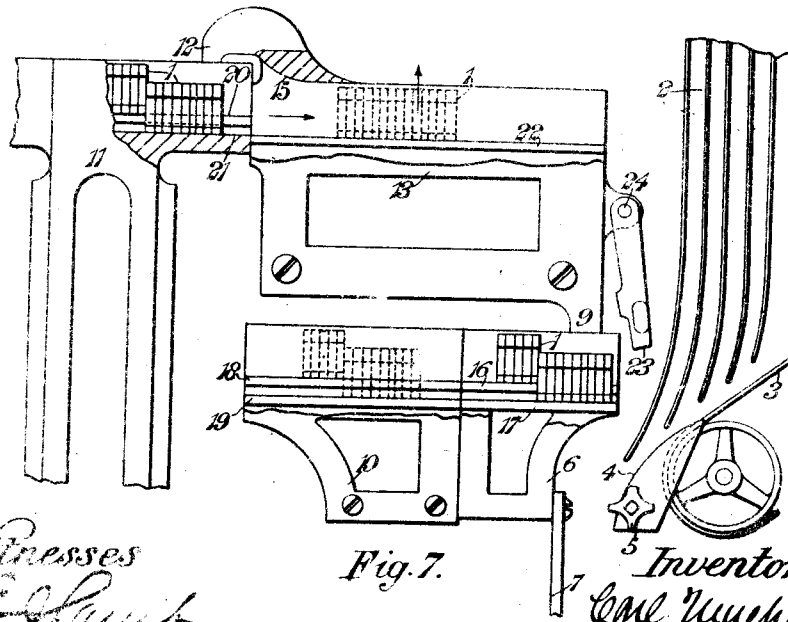


Fig. 7.

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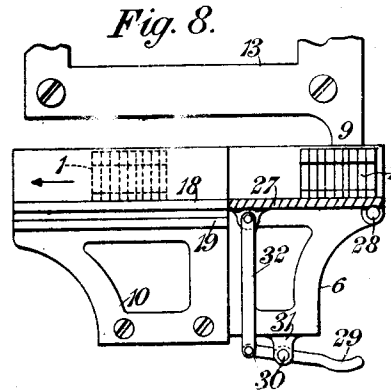
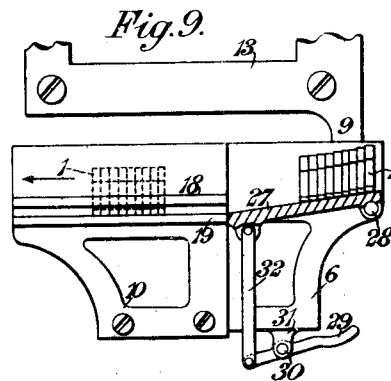
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APPLICATION FILED OCT. 20, 1910.

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5 SHEETS-SHEET 4.



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1,066,032.

Patented July 1, 1913.

5 SHEETS-SHEET 5.

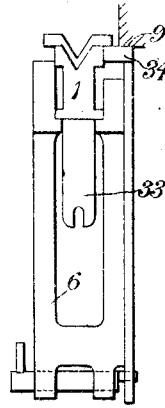


Fig. 11.

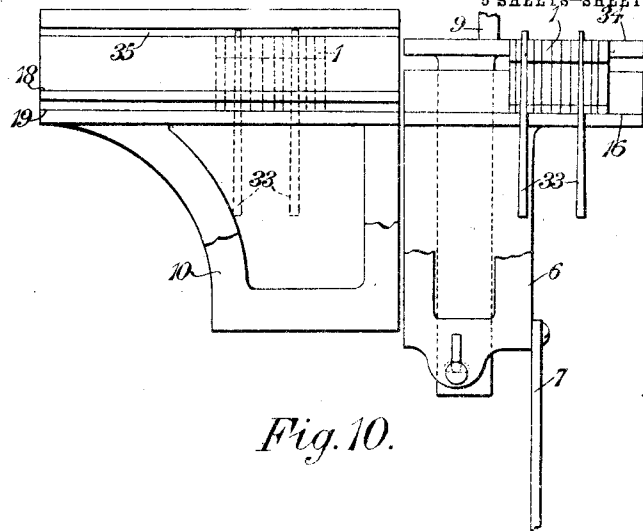


Fig. 10.

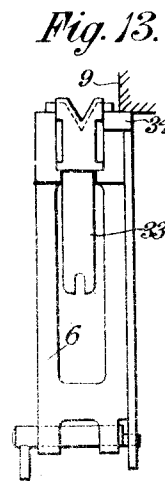


Fig. 13.

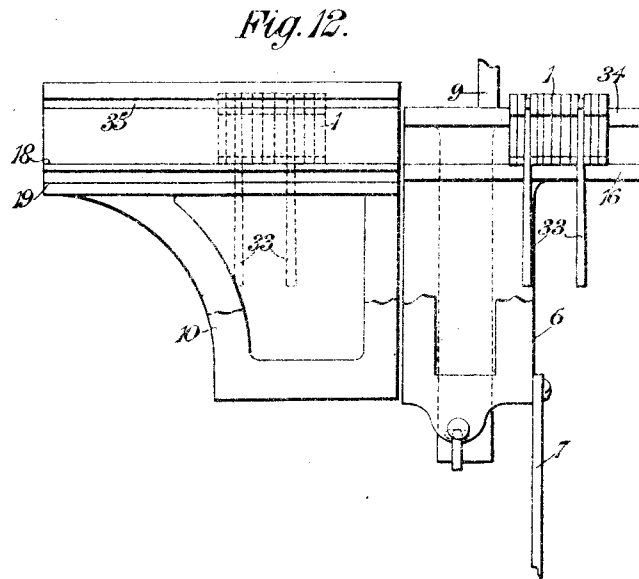


Fig. 12.

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UNITED STATES PATENT OFFICE.

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TYPOGRAPHICAL COMPOSING AND CASTING MACHINE.

1,066,032.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed October 20, 1910. Serial No. 588,141.

To all whom it may concern:

Be it known that I, CARL MUEHLEISEN, a citizen of the United States of America, residing at 88 Chausseestrasse, Berlin, N. 4, in the Empire of Germany, have invented new and useful Improvements in Typographical Composing and Casting Machines, of which the following is a specification.

The present invention consists of improvements in typographical composing and casting machines equipped with matrices or type dies having more than one face in the same surface. The terms "matrix," "matrices" are to be hereafter understood as including "type die," "type dies" respectively. It has up to the present, been the practice in machines of this class, to provide the assembler (*i. e.*, the organ in which the line of matrices is composed) with a switch device adapted to control the level or position with reference to the line of composition, which each matrix assumes before, at, or immediately after the moment of its entering the assembler. Consequently, the single guide in the assembler, as well as in the organs between the assembler and the distributor, and which sufficed so long as each matrix had only one face, had to be supplemented by an additional guide for each additional face. In such a machine so equipped in respect of faces, switch, and guides it was possible to compose a single line in either of the faces throughout, or in all the faces; the switch securing the presentation on the part of each succeeding matrix, of the desired face in the line of composition, and the guides maintaining such presentations for as long as was necessary. After a line had been composed, its subsequent treatment depended upon whether it consisted of matrices or of type dies. If it consisted of matrices, it was transferred to the casting mechanism, the latter thereupon casting a linotype from it. If it consisted of type dies, it was transferred to the indenting or printing mechanism, which thereupon indented a flong or printed on a strip or sheet. In either case, it was subsequently transferred to the distributor. (As the present invention makes no distinction between matrices and type dies, the terms "matrix," "matrices" are used hereinafter as including "type die" "type dies".) Now in machines characterized by the above

mentioned single guide in the assembler and subsequent organs of the machine, all the matrices in the composed line are held by the special device which presents them to the distributor, at a common level; but in machines characterized by additional guides, they are held at as many different levels as there are different faces in the composed line.

It is no unusual thing for a machine of the class described, to have several organs concerned in the act of the transferring the composed line to the distributor. The assembler itself may be stationary or be one of these transferring organs. In either case, each organ must have the additional guides, and, in any case, the organ or the last of the series of organs that effects the transference of the composed line, necessarily has its guide retractable from its operative position, to allow of the switched matrices returning to the common level. The spacers in the composed line would be moved through the assembler with the matrices, and, as they must occupy a predetermined position in the organ (shown in the accompanying drawings as the first elevator of a Mergenthaler linotype machine) which conveys them to their operative position, they might be moved too far to properly engage in the said organ. Inclined guides, such as are shown in the specification of British Letters Patent 12453 of 1909 as located in the path of the composed line from the assembler to the said organ, would be necessary to restore the spacers so moved too far, to their engaging position. The act of transferring the composed line as a whole along the said path, tends to prevent such restoration inasmuch as the transferring device would hold the spacers nipped between the matrices.

The present invention includes the substitution for the assembler switch and retractable guide, of an adjustability in the assembler and, sometimes, one also in the organ that has hitherto carried the said guide, such adjustability consisting in one organ being movable past the one which is adjacent to it in the direction in which the composed line travels through the machine; residing in either the assembler and carrying organ on the one hand or in the respectively adjacent organ on the other; and extending to as many assembling positions for

as there are faces in one surface of a matrix. It therefore includes in combination with the above, guides which are stationary, excepting, sometimes, for those in the assembler or its adjacent organ, and may include with each adjustability present in the improved machine, a movable stop adapted to regulate the level at which the respective faces are presented. The adjustability above mentioned may consist in the guides being pivoted on the respective organs in such a way as to make them switch guides in the manner of the well known switch rails of a permanent way.

The invention includes, further, the spacer guide in the assembler being adjustable in the same direction as the assembler and in being combined with a special horizontal spacer guide in the organ that is adjacent to the assembler in the direction in which the composed line travels through the machine, this spacer guide being so positioned as to practically register with the engaging position above referred to, and also, preferably, so arranged that the adjustment of it effects the adjustment of the assembler.

The arrangement further consists, preferably, in providing that the spacer guide shall, when adjusted, limit the adjusting motion of the assembler.

The accompanying drawings illustrate constructional forms of the invention which it, preferably, takes when it is applied to the well known Mergenthaler linotype machine when the latter is equipped with two-face matrices.

Figure 1 is a front sectional elevation showing the machine adjusted for and dealing with lines presenting their bottom faces throughout in the composing line; Fig. 2, a section on the line 2-2 of Fig. 1; Fig. 3, a section on the line 3-3 of Fig. 1, and including the cooperating end of the first organ of the distributor; Fig. 4, a sectional elevation showing the machine adjusted for and dealing with lines presenting their bottom faces throughout in the composing line; Fig. 5, a sectional elevation showing the machine adjusted for dealing with lines presenting their top faces throughout in the composing line; Fig. 6, a sectional elevation showing a machine for dealing with lines each composed in both faces, adjusted for and dealing with lines presenting their top faces throughout in the composing line; Fig. 7, a sectional elevation of the same machine adjusted for and dealing with lines each composed in both faces; Figs. 8 and 9, sectional front elevations of a pivoted switch for effecting the before described adjustability without the adjustable stop; Fig. 10, a sectional front elevation showing the spacer guide on the assembler, raised; Fig. 11, a sectional side elevation from the right of Fig. 10; Fig. 12, a sectional front eleva-

tion showing the spacer guide in the assembler, lowered; and Fig. 13, a sectional side elevation from the right of Fig. 12.

1 are the matrices; 2, part of the channeled assembler guide down which the matrices drop from their magazine on to 3, the traveling assembler belt which in turn delivers them successively on to the inclined guide 4, down which each matrix slides until it is within reach of the rotating assembler wheel 5 which drives it into the assembler 6.

7 is the link connecting the assembler 6 to the means by which it is reciprocated between its two terminal positions. One of these positions is the line-assembling position shown in Fig. 1, when the assembler rests upon the fixed support 8; the other is when it engages with the fixed stop 9, thereby registering—see Fig. 7—with the intermediate channel 10 into and through which the composed line is moved into the rising and falling first elevator 11 when the latter is in the dotted line position shown in Fig. 1.

12 is a fixed stop to limit the rise of the first elevator.

13 is a second intermediate channel (known as the space bar intermediate channel) into which the composed line is moved when the elevator 11 registers with it and which it does when it is up to the stop 12.

14 is the cooperating end of the first member of the distributor and on to which the composed line is threaded by its being moved into the channel 13.

15 is a depressor in the path of raised matrices as they enter the channel 13 to depress them to the common level, as shown in Fig. 7.

The parts just described are as heretofore.

16, 17 are the fixed guides in the assembler 6; 18, 19, those in the channel 10; 20, 21 those in the first elevator 11; and 22, the single one in the channel 13.

At this point, it must be explained that the present apparatus which, however, is shown simply by way of example, requires that all the matrices for any given line of composition, shall be always assembled on the same matrix guide, irrespective of which face or faces are to be presented in the composing line, and if there is more than one matrix guide, such matrices are assembled on the top one, to be afterward moved by hand on to their respective guides according to face desired.

23 is a stop easily movable by the operator into and out of the path of the assembler 6 to registration with the channel 10, by any suitable means, *e. g.*, by being pivoted upon the stationary pin 24 above the said path. When this stop is moved into the path of the assembler 6, its nose projects beyond the stop 9 in that path for a

distance equal to that between two faces in a matrix. Consequently, when the stop 23 is out of the said path—Fig. 4, the assembler 6 will rise to the stop 9; the bottom faces of matrices assembled in a single guide assembler will be in the composing line; and their feet will successively register with, and be moved on to and along, the top guides 18 and 20. On the other hand, when the stop 23 is in the said path—Fig. 5, the assembler 6 will only rise to the said stop; the top faces of the same matrices will be in the composing line; and their feet will successively register with, and be moved on to and along, the bottom guides 19 and 21. The channel 10 is an instance of the above mentioned respectively adjacent organ in the direction in which the composed line travels through the machine; and it is the stop 23 which provides the desired adjustability in the assembler with reference to the said adjacent organ. 25 is a second stop. Its function is to provide a like adjustability in the elevator 11 with reference to the channel 13. It is, therefore, mounted upon the machine in such a position that it can be easily moved by the operator into—Fig. 4, or out of—Fig. 5, the path of the elevator 11 as it moves into cooperating position with the channel 13. It is preferred to connect the stop 25 with the stop 23 in such a way that when the operator moves one into the path of the respective elevator, he moves the other out of it. The connecting means illustrated consists of a link 26 from the stop 25 to a suitable extension of the stop 23 beyond its pivot 24. When the stop 25 is in the path of the elevator 11—Fig. 4, the latter will move only high enough to make its top guide 20 register with the guide 22. When it is out of that path—Fig. 5, the elevator 11 will move high enough to make its bottom guide 21 register with the guide 22. In either case, it will be the guide 20 or 21, having the composed line on it, that so registers. The elevator 11 is an instance of the above mentioned organ that had its guide retractable, while the channel 13 is an instance of the respectively adjacent organ in the direction in which the composed line moves through the machine. Consequently, the presence of the stop 23 in, or its absence from, the path of the assembler 6 decides whether any given line shall throughout present its top or its bottom faces in the composing line. If the matrices have more than two faces each, an additional stop 23, 25, is provided for each additional face.

Referring to Figs. 6 and 7, it will be noticed that the assembler 6 has two guides 16, 17, instead of one only, (it being assumed that the matrices have two faces.) Further, that these guides are stationary with respect to the assembler; that there is

adjustability between only the pair of adjacent members 6 and 10; and that as there is none between the pair 11 and 13, the second stop 25 is absent. With such a modification, the matrices for a given line are, according to the present invention, always assembled on the top guide 16, irrespective of which face they all or even some of them, are to present in the composing line. Thus, if the line is to present the top face throughout, the stop 23 is moved into the path of the assembler 6. The rising assembler 6 will be stopped by it with the guide 16 registering with the guide 19 of the channel 10. The guide 21 of the elevator 11 will register with the guide 19, when the elevator registers with the channel 10; and after it has moved to the stop 12, its guide 21 will register with the guide 22 of the channel 13. If, on the other hand, the line is to present the bottom face throughout, the stop 23 is moved out of the path of the assembler 6, after which the guide 16 will register with the guide 18, the matrices be moved off it on to the guide 20 and be depressed by the depressor 15 as they are moved on to the guide 22.

Fig. 7 shows how a line having both faces in it, is assembled according to the present invention. The stop 23 is moved out of the path of the assembler 6; all the matrices of the line are assembled on the top guide 16, and after they have been so assembled, but before the assembler 6 is moved toward the channel 10, those matrices which are required to present their top faces in the composed line are moved manually down on to the guide 17, so that when the assembler 6 is stopped by the stop 9, both its guides 16, 17, register, respectively, with the guides 18, 19, with which will register, respectively, the guides 20, 21 of the elevator 11 when the latter registers with the channel 10. After the elevator 11 has moved up to the stop 12, its guide 21 will register with the guide 22 of the channel 13, the higher matrices being depressed by the depressor 15 as they are moved on the said guide. The movement of the matrices on to the guide 13 threads them on to the member 14.

It will be understood that the particular form and mounting of the stops 23 and 25, as herein shown and described, are not essential to the operation of my invention, as such stops may be differently arranged and located and still be comprised within its spirit.

The adjustability illustrated in Figs. 8 and 9 consists in the substitution for the adjustable stop 23, of a switch guide 27 pivoted on a pivot 28 transverse of the entrance to the assembler 6 so that its opposite end, *i. e.*, the one next to the intermediate channel 10, can be set to register with either of the guides 18 or 19. Any suitable device

for so setting the guide 27 may be used. The one illustrated consists of a finger lever 29 working on a transverse pivot 30 carried by a lug 31 depending from the bottom of the assembler 6, and a link 32 from it to the said guide 27. Any suitable means for maintaining the guide 27 in either of its positions may be used. When the composed line is to present the same face in the composing line throughout, the switch 27 need only be single as shown in the Figs. 8 and 9, but if the said line is to present more than one face in the composing line, the construction of the switch and the corresponding parts must be varied to suit the altered conditions, as will be obvious to those skilled in the art, in accordance with the principles of my invention as herein set forth.

Referring to Figs. 10 to 13, 33, 33, are the spacers; 34 the spacer guide on the assembler 6; and 35 the special spacer guide in the channel 10. The spacer guide 34 must be movable for a distance equal to that which separates the two matrix guides 18, 19 from each other. The guide 34 would, therefore, be sometimes in and sometimes out of register with the spacer guide 35, but for the adjusting motion of the assembler 6 supplementing that of the guide 34 and making it so register. If the composed line is to present its top faces in the composing line, the guide 34 is raised—Figs. 10 and 11, with the result that it engages with the fixed stop 9, when the guide 16 registers with the guide 19, and itself with the guide 35. When the said line is moved into and through the channel 10, the spacers 33 will be engaged in the guide 35 and the matrices 1 on the guide 19. If the composed line is to present its bottom faces in the composing line, the guide 34 is lowered—Figs. 12 and 13, with the result that it engages with the fixed stop 9 when the guide 16 registers with the guide 18, and itself again with the guide 35. When the said line is moved into and through the channel 10, the spacers will again be engaged in the guide 35, and the matrices 1 on the guide 18. Thus, when the guide 34 is down—Figs. 12 and 13, it has farther to travel before it engages with the fixed stop 9, than when it is up—Figs. 10 and 11, so that, in either case, its engagement with the stop 9 is coincident with its registration with the guide 35.

Figs. 11 and 13 show the spacer guide 34 on only the rear side of the assembler 6. It may, however, be on both the front and rear sides.

The exact form and mounting of the spacer guide and assembler stop 34, as herein shown and described, are not essential to my invention, as it may be differently fashioned and arranged and still be comprised within its broad spirit; numerous equivalents to perform similar functions will

readily suggest themselves to those skilled in the art.

In order to simplify and reduce the illustration in the drawings, the adjustable spacer guide and connected parts have been shown only in Figs. 10, 11, 12 and 13. Obviously, however, they also may be used in connection with the devices illustrated in other figures, and it is clearly to be understood that because of this selective illustration, their purposes and functions are not limited to any particular form.

The casting and distributing mechanisms in connection with which my invention is to be employed may be of any desired construction, although preferably and in the form illustrated in the drawings they are substantially similar to those shown in the patent to Mergenthaler, No. 436,532. Thus the elevator 11 is the well-known first elevator, which receives the line, carries it to the casting position, and subsequently raises it to the distributing mechanism. Similarly the elevator 14 is the well-known second elevator which conveys the matrices to the distributing rail and screws, not herein shown.

Having described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a typographical machine for multiple face matrices, the combination of a plurality of organs successively occupied by the composed line after its assemblage, said organs being provided with guiding means for maintaining the matrices at different relative levels therein, with means to vary the registration of the several guiding means with respect to the successive organs.

2. In a typographical machine for multiple face matrices, the combination of an organ temporarily occupied by the composed line after its assemblage and provided with guiding means for maintaining the matrices at different levels therein, with the assembling organ wherein the line is composed at one level, and means to register the assembled matrices with either one of the several guiding means of the first-mentioned organ, as desired.

3. In a typographical machine for multiple face matrices, the combination of two adjacent organs successively occupied by the composed line after its assemblage, said organs being provided with guiding means for maintaining the matrices at different relative levels, and means to alter the registration of the respective guiding means with respect to the successive organs.

4. In a typographical machine for multiple face matrices, the combination of two adjacent organs successively occupied by the composed line after its assemblage, said organs being provided with guiding means for maintaining the matrices at different levels, and means for adjusting the organs

with reference to each other so as to alter the registration of the respective guiding means.

5 5. In a typographical machine for multiple face matrices, the combination of two adjacent organs successively occupied by the composed line after its assemblage, said organs being provided with guiding means for maintaining the matrices at different levels, and means for adjusting the organs with reference to each other in the path pursued by the assembled line so as to alter the registration of the respective guiding means.

10 6. In a typographical machine for multiple face matrices, the combination of two adjacent organs successively occupied by the composed line after its assemblage, said organs being provided with a plurality of guiding means for maintaining the matrices at different levels, an assembling organ provided with a corresponding plurality of matrix guiding means, and devices to alter the registration of the respective guiding means of the said three organs.

15 7. In a typographical machine for multiple face matrices, the combination of an assembler having a plurality of guides to maintain the matrices at different levels, an organ to receive the composed line therefrom, means for shifting the assembler into operative relation to the said organ, and a stop whose position varies the extent of the assembler shift.

20 8. In a typographical machine for multiple face matrices, the combination of assembling means, and means for transferring the assembled line therefrom to the casting position, the said transferring means comprising two adjacent organs successively occupied by the assembled line, together with means for adjusting the two organs with reference to each other to correspond to different levels of the matrices.

25 9. In a typographical machine for multiple face matrices, the combination of assembling means, and means for transferring the assembled line therefrom to the casting position, the said transferring means comprising two adjacent organs successively occupied by the assembled line, the said organs being provided with guiding means for maintaining the matrices at different levels, together with means to alter the registration of the respective guiding means to adapt them to the different levels of the matrices.

30 10. In a typographical machine for multiple face matrices, means for transferring the assembled matrices from the casting position to the distributor, the said transferring means comprising two adjacent organs successively occupied by the matrices, together with means for adjusting the two organs with reference to each other to correspond to different levels of the matrices.

35 11. In a typographical machine for mul-

multiple face matrices, means for transferring the assembled matrices from the casting position to the distributor, the said transferring means comprising two adjacent organs successively occupied by the matrices, one of said organs being provided with guiding means to maintain the matrices at different levels, together with means for adjusting the two organs with reference to each other to correspond to the different levels of the matrices.

40 12. In a typographical machine for multiple face matrices, the combination of two adjustable organs occupied by the composed line in its passage through the machine, and means for adjusting the two organs to adapt them to different levels of the matrices, together with means for controlling the respective adjustments of the two organs and connections whereby when one is free to act the other is held out of action.

45 13. In a typographical machine, an assembler provided with a spacer guide adjustably mounted with reference thereto, whereby the spacers may be supported in different positions therein.

50 14. In a typographical machine, a movable assembler provided with a spacer guide mounted so as to be adjustable therein in the direction of the assembler movement, whereby the spacers may be supported in different positions therein.

55 15. In a typographical machine, the combination of an assembler and an adjacent organ to which the assembled line is transferred, the assembler being provided with means for adjusting it with reference to the adjacent organ, and with a spacer guide adjustable with reference to the assembler to support the spacers in different positions.

60 16. In a typographical machine, the combination of an assembler and an adjacent organ to which the composed line after its assemblage is transferred, the said organ being provided with a stationary spacer guide and the said assembler being provided with means for altering its position relative to the adjacent organ and with a movable spacer guide similarly adjustable.

65 17. In a typographical machine for multiple face matrices, the combination of a fixed stop, an assembler movable to and from the said stop, an organ adjacent to the assembler to which the assembled line is transferred, the said adjacent organ being provided with a plurality of matrix guides and a spacer guide, and the assembler being provided with a spacer guide adjustable with reference thereto in the direction of its movement, and which directly contacts with the said stop, and is thus adapted to establish registration between itself and the spacer guide in the adjacent organ, and the registration of the assembled matrices

with one of the matrix guides in the adjacent organ.

18. In a typographical composing machine, the combination of an assembler, an adjacent organ to which the composed line after its assemblage is transferred, and means for varying the relative positions of the assembler and organ, the said organ being provided with a horizontal spacer guide, and the assembler provided with a spacer guide adjustable with reference thereto in the same direction as the assembler adjustment.

19. In a typographical machine for multiple face matrices, the combination of an assembler having a plurality of stationary guides to maintain the matrices at different levels, devices to receive the composed line after its assemblage, and means to shift the assembler into relation to the receiving devices in one or another operative position at will.

20. In a typographical machine for multiple face matrices, the combination of an assembler, devices to receive the composed line after its assemblage, and means to shift the assembler into relation to the receiving devices in one or another operative position at will.

21. In a typographical machine for multiple face matrices, the combination of an organ provided with a plurality of means to support the assembled line at different levels therein, and means whereby the said line may be assembled at one level and delivered therefrom to one or another of the supporting means of said organ, as desired.

22. In a typographical machine for multiple face matrices, the combination of a movable organ for conveying the composed line to and from the mold and provided with means for supporting it at different levels therein, and means whereby the said line may be assembled at one level and delivered therefrom to said movable organ at one or another of its supporting levels.

23. In a typographical machine for multiple face matrices, the combination of a movable organ for conveying the composed line to and from the mold and provided with a plurality of means for supporting it at different levels therein; and a second organ to receive the line from the first and provided with means to support it at a single level, together with devices for registering one or another of the supporting means of the first organ with the single supporting means of the second organ.

24. In a typographical machine for multiple face matrices, the combination of two adjacent organs successively occupied by the assembled line, one of said organs being provided with means to support matrices at

different levels and the other provided with means to support matrices at one level, the said supporting means being relatively adjustable so as to connect those of the second organ with one or another of those of the first.

25. In a typographical machine for multiple face matrices, the combination of an organ adapted to support the assembled line at different levels therein, and a second organ adapted to support said line at one level, and means whereby the line may be transferred from its level in the second organ to one or another of the levels in the first-mentioned organ.

26. In a typographical machine for multiple face matrices, the combination of the assembler wherein the line is composed, and the intermediate channel to receive the composed line therefrom after its assemblage, the said parts being adjustable to different operative positions with relation to each other.

27. In a typographical machine for multiple face matrices, the combination of an assembler and an organ to receive the assembled line therefrom, the said assembler being adjustable to different delivering positions with relation to the said organ.

28. In a typographical machine for multiple face matrices, the combination of a movable assembler, an organ to receive the assembled line therefrom, and devices for arresting the assembler at different operative positions with relation to the said organ.

29. In a typographical machine for multiple face matrices, the combination of two adjacent organs successively occupied by the assembled line, said organs being adjustable to different operative positions with relation to each other.

30. In a typographical machine for multiple face matrices, the combination of two adjacent organs successively occupied by the assembled line, said organs being adjustable to different operative positions with relation to each other, and means for controlling their operative position, at will.

31. In a typographical machine for multiple face matrices, the combination of an assembler, an organ to receive the assembled line therefrom, the said assembler being movable to different operative positions with relation to the said organ, and stop devices for arresting the assembler in its selected position.

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

CARL MUEHLEISEN.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.