

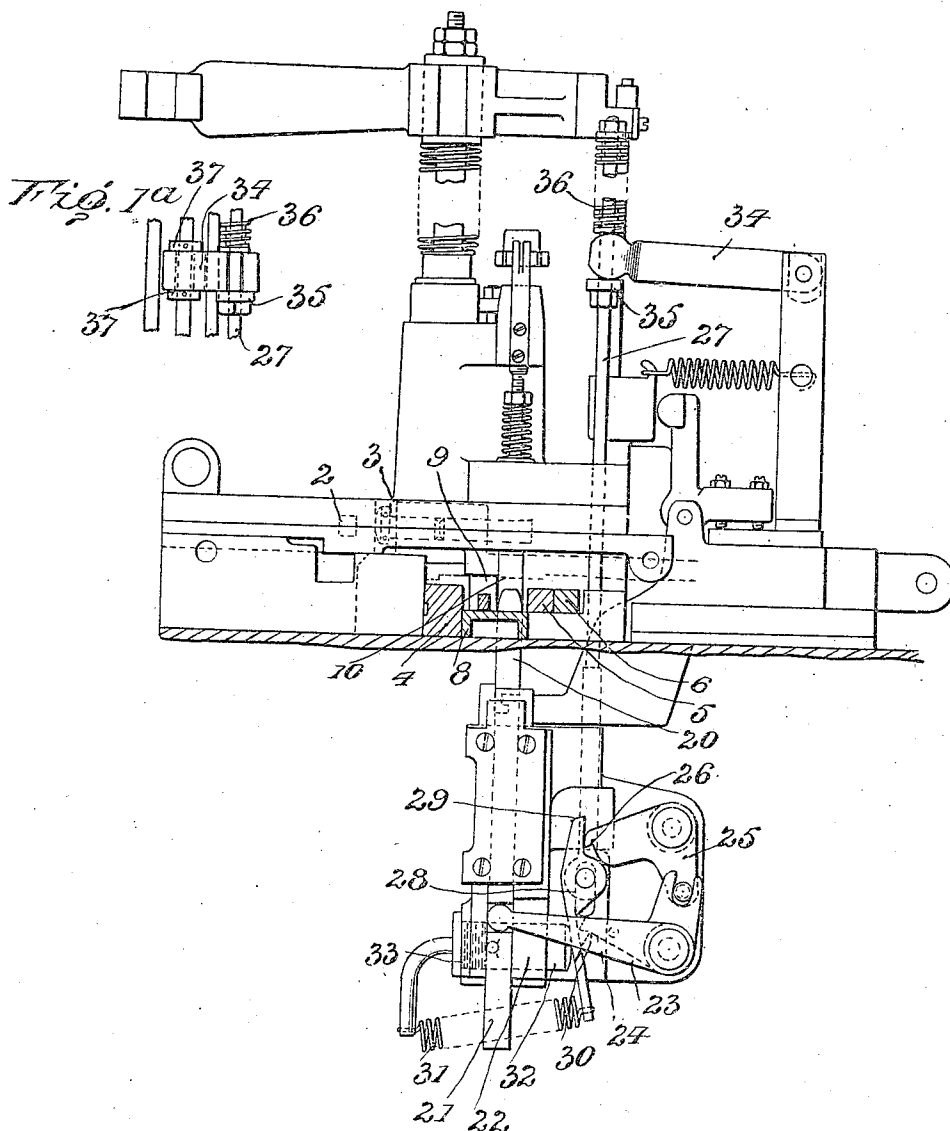
F. H. PIERPONT.
LETTER SPACING MECHANISM FOR TYPE CASTING AND COMPOSING MACHINES.
APPLICATION FILED DEC. 8, 1908.

952,633.

Patented Mar. 22, 1910.

3 SHEETS—SHEET 1.

Fig. 1.



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Fig. 2.

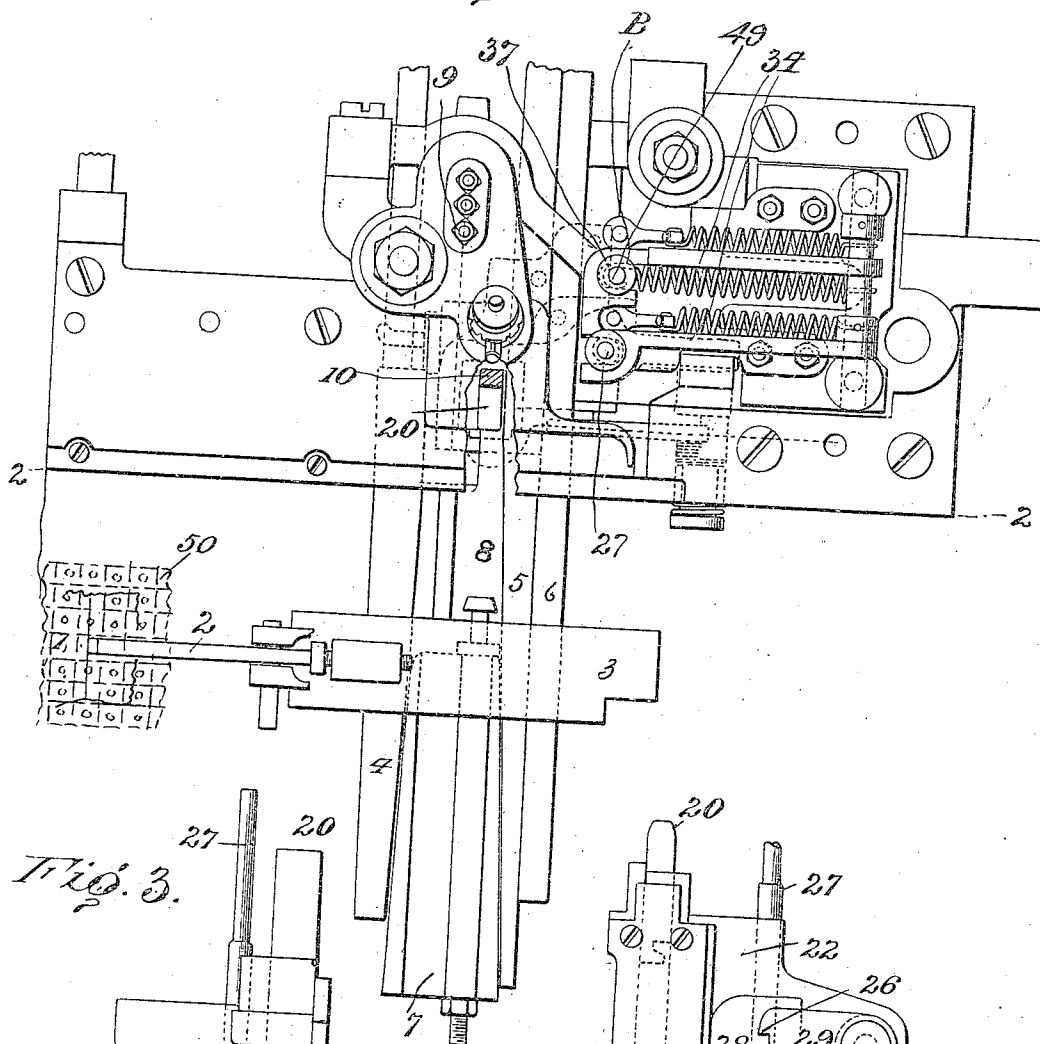


Fig. 3.

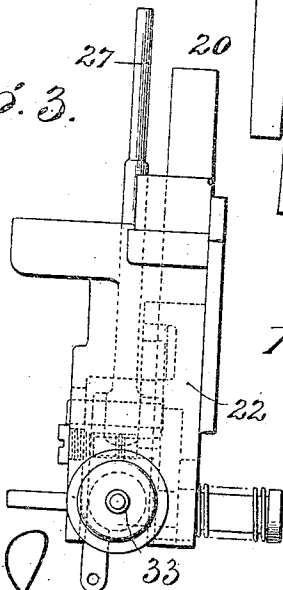
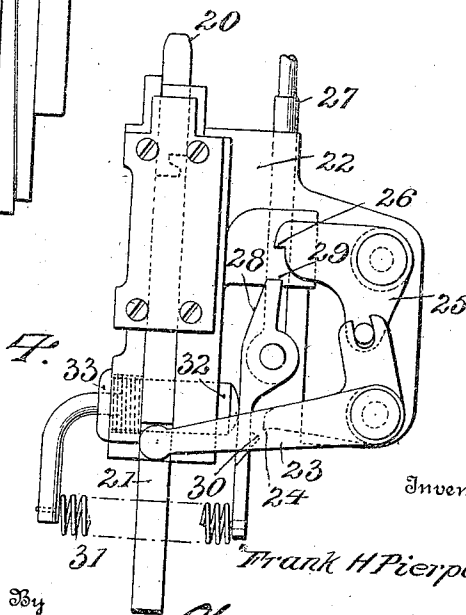


Fig. 4.



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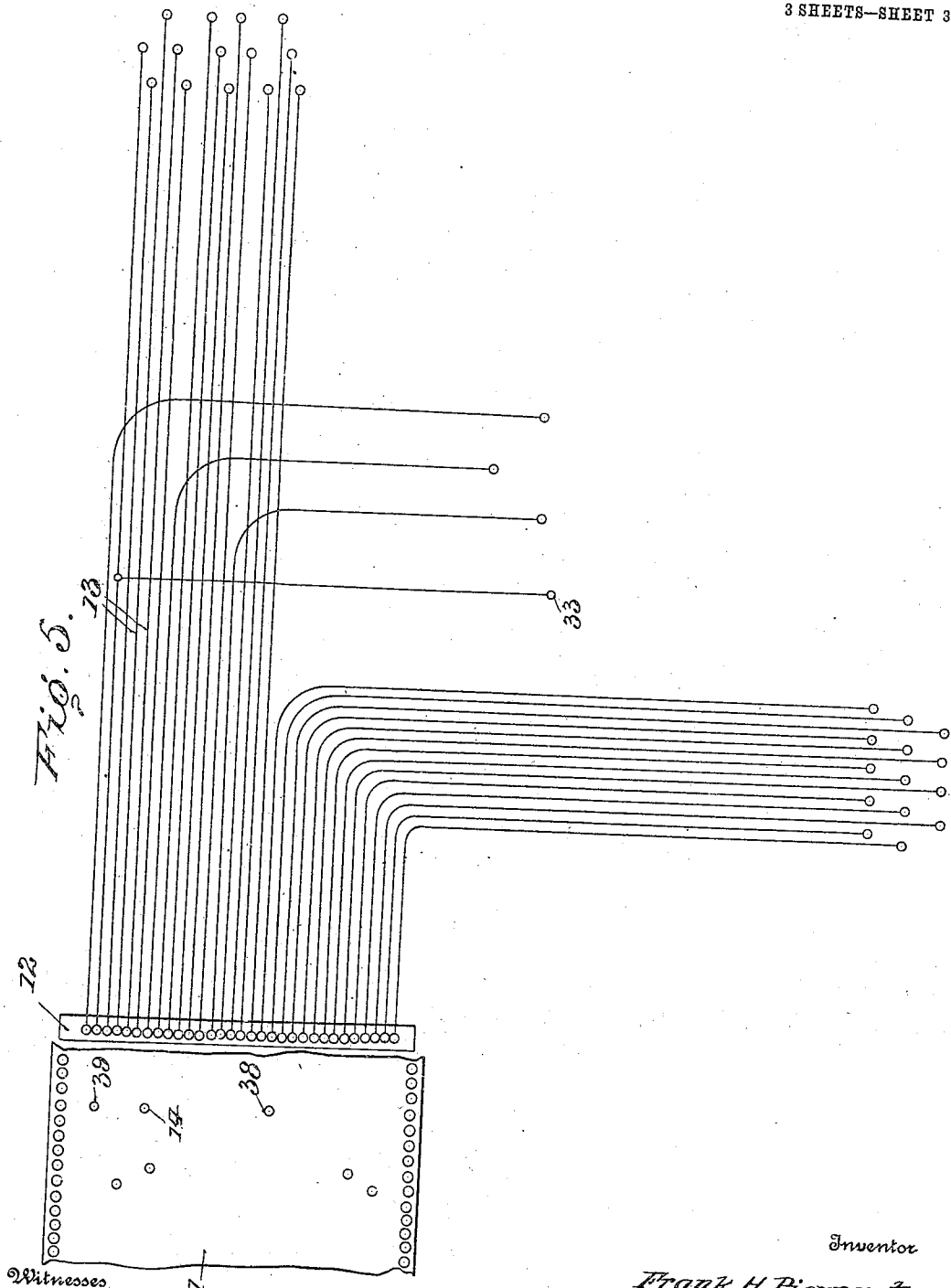
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

FRANK HINMAN PIERPONT, OF HORLEY, ENGLAND, ASSIGNOR TO LANSTON MONO-TYPE MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF VIRGINIA.

LETTER-SPACING MECHANISM FOR TYPE CASTING AND COMPOSING MACHINES.

952,633.

Specification of Letters Patent.

Patented Mar. 22, 1910.

Application filed December 3, 1908. Serial No. 466,511.

To all whom it may concern:

Be it known that I, FRANK HINMAN PIERPONT, a citizen of the United States, temporarily residing at Horley, county of Surrey, England, have invented a certain new and useful Improvement in Letter-Spacing Mechanism for Type Casting and Composing Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures of reference marked thereon.

The present invention relates to the class of type machines in which the mold is provided with adjusting devices for varying the dimensions of the mold cavity to correspond with that of the character or space to be produced, and it is particularly adapted to pattern controlled type casting and composing machines provided with a plurality of matrices and means for selectively presenting the latter to the mold, for the production of justified lines of single type which are afterward assembled in column form.

It is often necessary or desirable to space out a particular word, passage or sentence, as in some languages, German for example, where this is done to emphasize the particular word or passage. Heretofore it has been customary to effect this spacing or opening out of the characters by the insertion of thin quads or spaces, and as the spacing required is less than the thinnest space type that automatic type casting and composing machines are ordinarily capable of producing, the insertion of such spaces is usually effected by hand, after the matter has been cast and assembled, in justified lines, and as this tends to destroy the justification, much time is consumed in reestablishing the same. If, however, the machine should be equipped to produce such thin spaces (usually two units in width) the insertion of each would consume one cycle of operations, so that the casting of the spaced-out matter would occupy double the time taken for ordinary matter. Not only would this extra time be required at the casting machine, but also at the keyboard or pattern composing machine, inasmuch as a key or equivalent signal producing device would have to be operated for each inserted space.

Now the present invention has for its principal object to provide means whereby this spacing out of the characters may be automatically effected during the formation of said characters and without loss of time or interference with the normal action of the mechanism for dimensioning the type bodies to accord with the characters borne thereby or the justification of the lines, to which end it consists, broadly, in equipping the type casting and composing machine with auxiliary or supplemental mold adjusting devices adapted to effect an abnormal variation or enlargement of the mold cavity at the time each of said spaced type is produced, so that the bodies of the designated type will be varied or increased, setwise, by a predetermined amount corresponding with the desired spacing.

As applied to pattern controlled automatic type casting and composing machines the invention also includes the addition of signal interpreting devices responsive to the pattern and operating to automatically couple and uncouple the auxiliary or supplemental mold adjusting devices with the normal mold adjusting devices. As thus applied, the pattern, in addition to the usual character, space and justification signals, is provided with special spacing signals acting upon said interpreting devices, and when the pattern employed is produced, as usual, upon a keyboard composing machine, means are provided for registering the additions made to the spaced type, to the end that due allowance may be made therefor in figuring out or computing the justification fraction for the line. A competent means for this purpose is made the subject of a companion application Serial No. 466,510 filed December 8, 1908.

In the accompanying drawings illustrating a preferred form of embodiment of the invention: Figure 1 is a side elevation and Fig. 2 a top plan view of a portion of the mold adjusting devices of a type casting and composing machine with auxiliary or supplemental mold adjusting and signal interpreting devices applied thereto. Fig. 3 is an end elevation and Fig. 4 a side elevation of the signal interpreting devices controlling the auxiliary or supplemental mold adjusting devices. Fig. 5 is a diagrammatic representation of a section of the pattern

or record strip together with the tracker board and air passages leading to the control devices.

The same numerals designate like parts in the several figures.

For purposes of illustration and in its preferred form of adaptation the invention is shown applied to a monotype casting machine, that of Patent No. 625,998, dated May 30, 1899, to which latter reference is made for a more full disclosure.

It will suffice for present purposes to designate those elements of the patented machine with which the present improvements are more directly connected, such as the mold 1; mold-blade 2; abutment slide 3; normal wedge 4; justification wedges 5, 6; transfer blocks or wedges 7, 8; locking rod 9; adjustable limiting abutment 10; pattern or record strip 11; tracker bar or board 12; and pressure conduits 13 communicating with the stop pins of the primary gaging devices, the devices for coupling each justification wedge with its positioning mechanism, and the devices for reciprocating rod 9 to bring transfer wedges 7, 8 alternately into action, and thereby transfer control of the mold-blade from the normal wedge alone to the normal plus justifying wedges and vice versa.

In the patented machine the justifying space signal contains a perforation 14 not employed in connection with any of the character signals, and which operates to effect the lifting of rod 9 from engagement with the actuating rod of transfer wedge 7, to that of transfer wedge 8. The transfer wedges are both normally retracted with respect to abutment 10, and, in the absence of said perforation 14, rod 9 operates to retain transfer block 7 in retracted position and permits transfer block 8 to be advanced into contact with abutment 10 so that the normal wedge in conjunction with said transfer wedge 8 determines the position of adjustment of mold blade 2 and the dimensioning of the mold. This is the condition when character and other non-justifying type are produced. When, however, a justifying space signal is presented, its perforation 14 effects an upward movement of rod 9 while both transfer wedges are in their retracted position, thereby releasing transfer wedge 7 and engaging transfer wedge 8, so that the former will be advanced into contact with abutment 10, thereby causing the adjustment of the mold-blade to be performed by the normal wedge acting in conjunction with the justifying wedges and transfer wedge 7. Thus the character and other non-justifying type are dimensioned, set ways, through the adjustment of normal wedge and the justifying type through the normal and justifying wedges.

To effect the spacing out of the characters

it is proposed to introduce supplemental adjusting devices competent to vary the normal adjustments of the mold, and to control the same through the pattern or record strip, to the end that the compositor of the pattern may, through the latter, control the action of the casting machine and cause it to automatically space out the desired matter. In the preferred form of embodiment illustrated this supplemental mold adjusting or spacing-out device is represented by an interrupter or arresting means such as a distance block 20 adapted to be interposed between the transfer wedge 8 and abutment 10 whenever the body of a character type is to be enlarged. The usual spacing required is approximately two units, and the distance block 20 is of such dimensions that when interposed it will interrupt or arrest the transfer wedge at such point in its traverse toward abutment 10 as to permit a two unit lateral displacement of the normal wedge and slide 3 when the mold blade is retracted into contact with said slide thus increasing the set-wise dimensions of the mold cavity a corresponding amount over and above the predetermined size as determined by the longitudinal displacement of the normal wedge and corresponding with the dimensions of the character to be produced. The effect of such adjustment is to produce a type whose body is wider than normal by an amount equal or proportional to the thickness of distance block 20, the excess being applied on one side only of the body inasmuch as the seating of the matrix remains the same for the spacing as for normal type.

Distance block 20 is detachably secured to the slide 21 guided to reciprocate on a frame 22, and engaged by one arm of a bell crank lever 23 provided with a shoulder 24. The opposite arm of lever 23 is pin-jointed or otherwise correspondingly connected with one arm of a bell-crank lever 25, the opposite arm whereof is furnished with a shoulder 26. Coupled with a rod 27 and supported to reciprocate across shoulders 24, 26, is a double pawl 28, the point 29 whereof on one side the pivot is adapted to enter below and engage shoulder 26, when the pawl is swung in one direction, while the point 30 below the pivot is adapted to enter below and engage shoulder 24 when said pawl is swung in the opposite direction. A spring 31 coupled with pawl 28 tends to hold the latter with its point 29 in the path of shoulder 26, and a piston 32 working in a cylinder 33 in or on frame 22 operates in opposition to said spring to withdraw point 29 and advance point 30 into the path of shoulder 24.

Cylinder 33 communicates through a branch pipe with one of the ports in the tracker bar leading to a stop pin designat-

ing a quad matrix other than the justifying space matrix, but interchangeable therewith, and rod 27 is indirectly coupled with locking rod 9, as through lever 34 engaging between a shoulder 35 and spring 36 carried by rod 27, said lever 34 also extending between collars 37 carried by rod 49 so as to partake of the movements of the latter. Normally distance piece 20 is maintained in its lowest or retracted position, out of the path of the transfer wedges, where it in no wise interferes with the normal operations of the machine, and to bring said distance piece into action it is only required that pressure be admitted to cylinder 33 at the time pawl 28 rises.

As before indicated the usual justifying space type signals are each composed of a designating perforation 14 (operating through trip rod 49 to couple locking rod 9 with the center pin actuating lever) and a perforation 38 controlling a stop pin of the series operating to control the position of the normal wedge and of the die case in one of its two way movements. Preferably the signal for spaced type is associated with this justifying space signal by the addition of a perforation 39, Fig. 5. The port in the tracker board controlled by this perforation 39 communicates with and admits pressure to the cylinder 33, consequently when the spaced type signal is presented perforation 14 operates to couple up the pawl carrying rod 27 with the center pin lever, while perforation 39 operates through piston 32 to tilt pawl 28, thereby withdrawing its point 29 and projecting point 30 beneath shoulder 24. As the center pin lever rises, to shift locking rod 9, pawl 28 is elevated, and, by the engagement of its point 30 with shoulder 24, tilts levers 23, 25, and elevates distant block 20 into the path of transfer wedge 8, as illustrated in Fig. 1. After the justifying space indicated by the signal has been cast locking rod 9 and pawl 28 return to normal position, and, pressure in cylinder 33 having been interrupted by the presentation of the next succeeding type signal, pawl 28 is tilted by its spring to withdraw point 30 and present point 29 beneath shoulder 26 of bell crank lever 25. The distance block 20 retains its elevated or operative position until the presentation of a space signal in which perforation 39 has been omitted and each type cast in the interval will have added two units or other predetermined uniform degree of increase in width on one side of its body. The omission of perforation 39 from the space signal is the signal for closing the spaced out matter and returning to normal, and when such signal is presented rod 9 and pawl 28 reciprocate as before, but this time as no pressure is admitted to cylinder 33 the pawl is not tilted and its point 29 engaging should-

der 24 tilts levers 23, 25, to withdraw distance block 20 from the path of transfer wedge 8.

As is well known the casting machine with which the improvements are shown associated is so organized that the types are produced in the reverse order from that in which they are composed on the pattern, consequently in setting up the pattern the extra-spacing signal 39 will be formed in conjunction with the justifying space signal immediately succeeding the spaced out matter, the normal justifying space signal preceding said matter serving to cut out the extra spacing mechanism; and should it be desired to extend the spaced out matter over one or more justification spaces the perforation 39 will be annexed to their signals but no change in the position of distance block 20 will be occasioned by the presentation of said signals as the admission of pressure to cylinder 33 will again withdraw the point 29 of pawl 28 from the path of shoulder 24 and levers 23, 25, will not be disturbed upon the ascent of the pawl. If desired the spaced type signal perforation 39 might be arranged to control a port in the tracker board communicating directly with cylinder 33; but one of the ports controlling one of the stop pins can be utilized providing the matrix designated thereby is a blank or quad. The fact that the port with which perforation 39 registers also controls a row of matrices and that certain of the type signals contain perforations registering with said port, to designate the row, does not interfere with its use in connection with the spaced type actuating mechanism, inasmuch as said type signals do not contain the perforations 14, hence while pawl 28 will be tilted it will not be reciprocated to engage levers 23, 25, or either of them.

Believing himself to be the first to produce justified lines composed in part of self spacing individual type, formed in the order of composition, to equip automatic type casting and composing machines with supplemental mold adjusting devices adapted to produce said self spacing type, and to control the production of the latter through the medium of a pattern or record strip, applicant desires it to be understood that the invention as claimed herein is not limited or confined to the special and preferred form of embodiment herein described and illustrated but includes as well other and equivalent means of adjustment and control adapted and operating to produce like results.

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

1. A type casting and composing machine such as described equipped with three pattern controlled mold adjusting means, one

- for varying the dimensions of the mold cavity to correspond with the characters, another for varying the dimensions of the mold cavity to correspond with the justifying spaces, and a third for varying the effective action of the first named adjusting means for the production of spaced type.
2. In a type casting and composing machine provided with mold adjusting mechanism including normal and transfer wedges and a stop for limiting the advance of the latter, and in combination therewith a distance block arranged and adapted to be interposed between said transfer wedge and its limiting stop.
3. In a type casting and composing machine the combination of the following elements, to wit; normal mold adjusting devices for dimensioning the mold cavity to correspond with the face to be cast; abnormal or justifying adjusting devices for dimensioning spaces; a transfer mechanism including transfer devices controlling the application of said adjusting devices to a movable member of the mold; and means coupled with said transfer mechanism and acting upon the normal mold adjusting devices to vary the position of the movable member of the mold.
4. In a type casting and composing machine provided with mold adjusting mechanism including normal and justifying members, a transfer wedge and a limiting or positioning abutment for said wedge and in combination therewith an interponent or distance piece adapted to be interposed in the path of said wedge to arrest its motion toward such positioning abutment.
5. In a type casting and composing machine provided with mold adjusting devices including normal and justifying members, a plurality of transfer wedges, and normal positioning devices for said wedges, and in combination therewith, controllable positioning means acting in conjunction with the transfer wedge of the normal adjusting member to vary the action of the latter.
6. In a type casting and composing machine provided with pattern controlled mold adjusting devices including normal and justifying adjusting devices, and transfer mechanism and in combination therewith a pattern controlled supplemental mold adjusting mechanism acting in conjunction with the transfer mechanism and normal mold adjusting devices to vary the action of the latter for the production of spaced matter.
7. In a type casting and composing machine, provided with mold adjusting devices including a transfer wedge and a limiting abutment therefor and in combination therewith a distance piece adapted to be interposed between said transfer wedge and abutment.
8. In a type casting and composing machine provided with mold adjusting devices including normal and justification mold adjusting means, a plurality of transfer wedges and pattern controlled means for actuating said transfer wedges and in combination therewith an arresting member or distance piece for said transfer wedges provided with pattern controlled actuating devices.
9. In a type casting and composing machine provided with pattern controlled mold adjusting devices including normal and justification mold adjusting means, transfer wedges, and means for bringing the latter alternately into action, and in combination therewith the following elements, to wit; means adapted to arrest the transfer wedge of the normal mold adjusting devices; and actuating devices for said arresting means coupled with the transfer wedge actuating devices and provided with controlling means for designating the times of application and withdrawal of said arresting means.
10. In a type casting and composing machine such as described the combination of the following elements, to wit; transfer wedges for controlling the alternate application of the normal and justification adjusting devices to the mold; pattern controlled means for selectively bringing either of said wedges into action; a stop for the selected wedge; a distance piece adapted to be interposed between the stop and wedge to determine the position of the latter; and actuating devices for said distance piece including pattern controlled means for coupling same with said distance piece.
11. In a type casting and composing machine provided with normal and justifying mold adjusting mechanism including a transfer wedge for the normal adjusting devices and in combination therewith a positioning member for said transfer wedge and actuating devices therefor including opposed levers coupled with said positioning member to shift the latter, a reciprocating pawl adapted to engage either of said levers and a motor device for directing the pawl into engagement with either of said levers.
12. In a type casting and composing machine such as described provided with mold adjusting devices including normal and justification adjusting devices, transfer wedges, means for selectively advancing said wedges and a positioning abutment for the advanced wedge and in combination therewith the following elements, to wit; a distance piece adapted to be interposed between the selected wedge and its abutment; a lever coupled with said distance piece and provided with a shoulder; a second lever also provided with a shoulder and connected to move with said first named lever; a reciprocating member carrying a double

pointed pawl and a piston for tilting said pawl to engage the shoulder on one or the other of said levers.

13. In a type casting and composing machine such as described and in combination with the transfer wedge and its abutment, a slide or carrier provided with a detachable distance piece, the latter adapted to be interposed between the abutment and wedge to limit the throw of the latter and thereby enlarge the adjustment effected by the normal mold adjusting devices.

14. In a type casting and composing machine provided with pattern controlled mold adjusting devices including normal and justification adjusting devices set from said pattern, transfer wedges and actuating devices controlled by the pattern to selectively couple the normal and justification adjusting devices with the mold, and a positioning device or abutment for the selected wedge and in combination therewith a distance piece movable in the interval between the wedge and its abutment and pattern

controlled actuating devices for said distance piece.

15. In a pattern controlled type casting machine provided with an adjustable mold, a series of matrices, normal mold adjusting devices for dimensioning the mold cavity to correspond with the setwise dimensions of each matrix when presented to the mold, and a justification mold adjusting mechanism for the justifying spaces, and in combination therewith a pattern controlled mold adjusting means separate from but supplementing the action of said normal mold adjusting devices and operating to enlarge the effect of the latter so that the setwise dimensions of the produced type will be greater than the setwise dimensions corresponding with the face as measured by said normal mold adjusting devices.

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