

W. NICHOLAS & W. ACKERMAN.
 CONTROLLER MEANS FOR TYPE CASTING AND COMPOSING MACHINES.

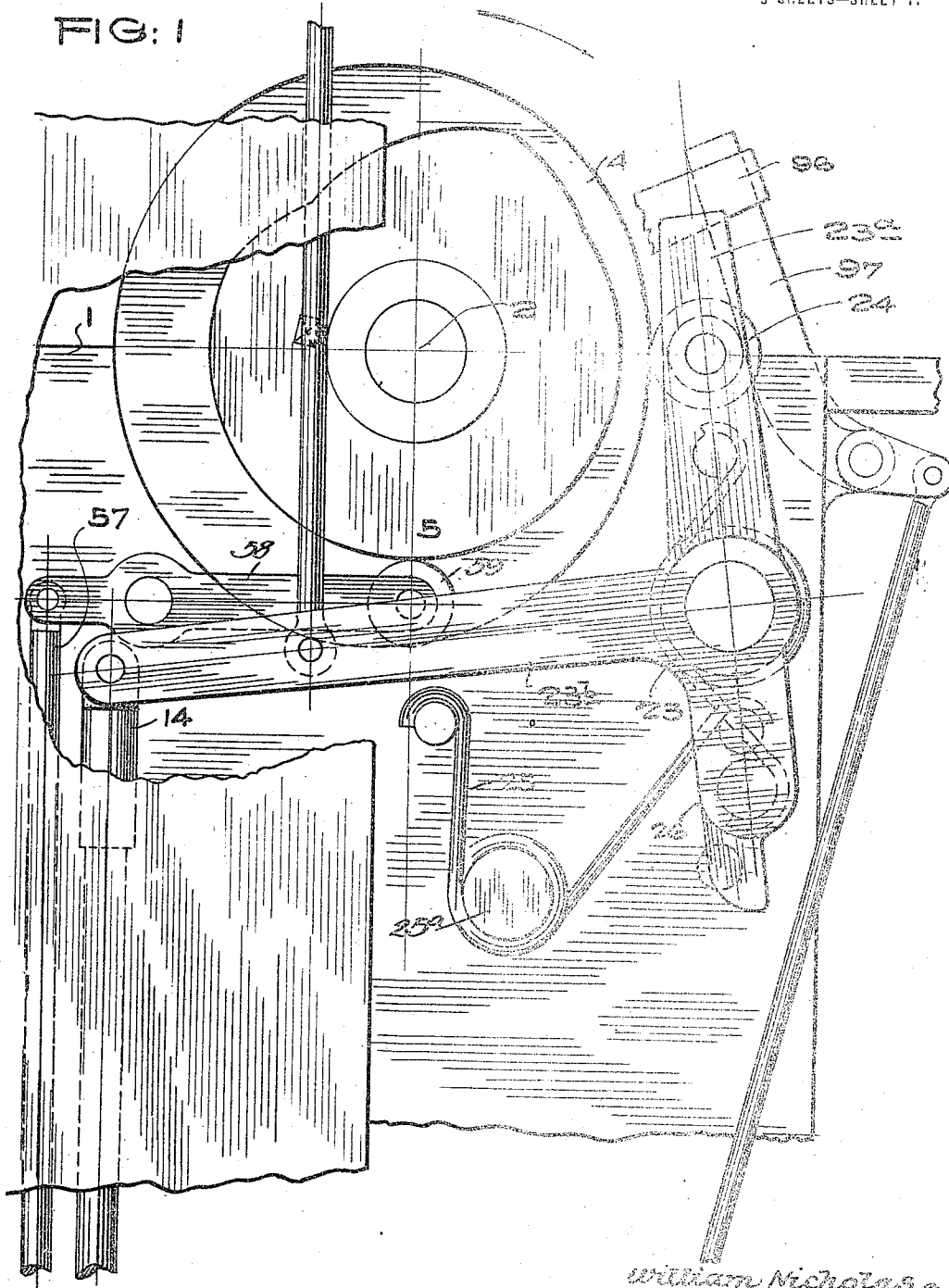
1,237,685.

APPLICATION FILED JULY 7, 1914.

Patented Aug. 21, 1917.

5 SHEETS—SHEET 1.

FIG. 1



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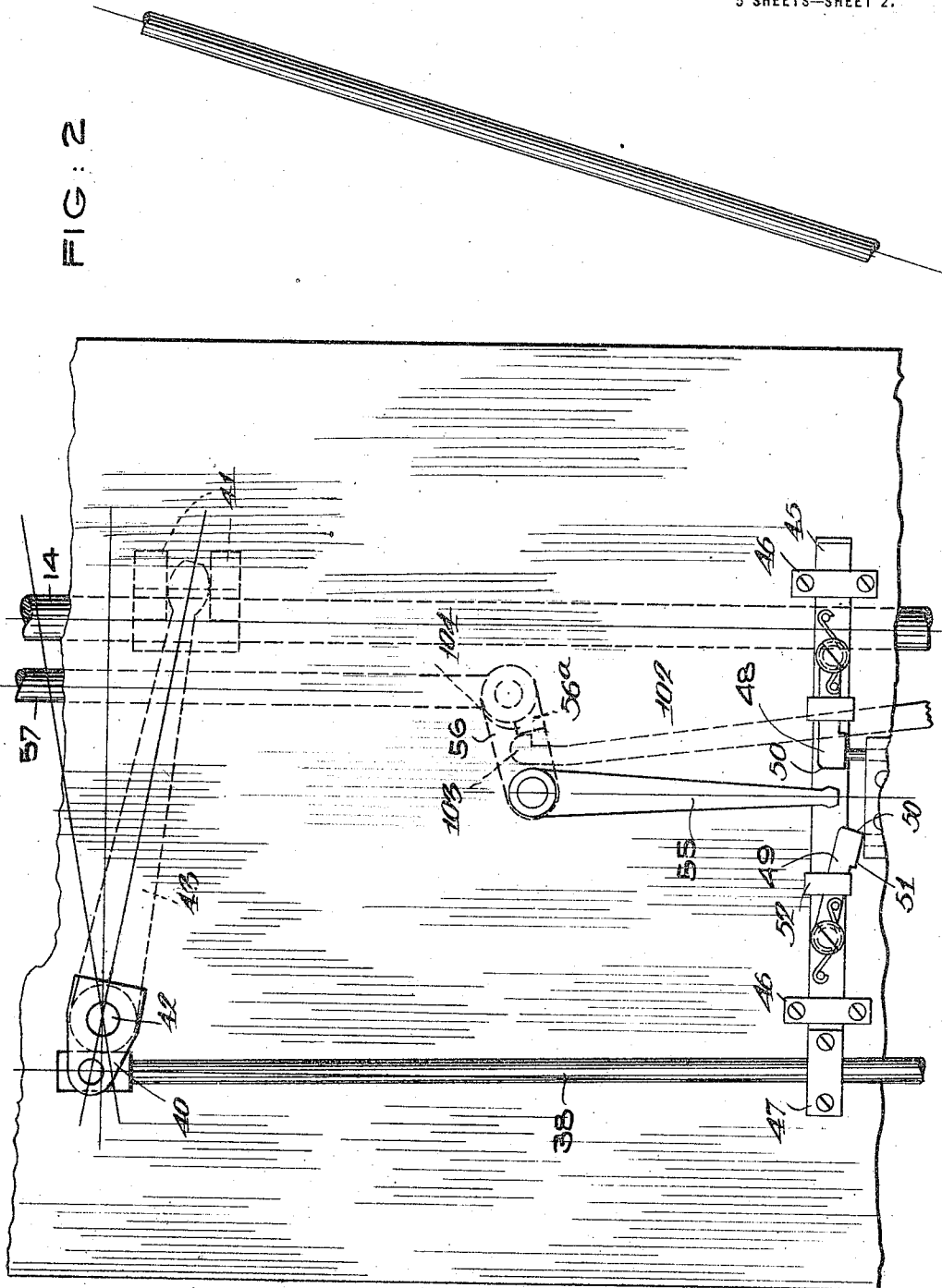
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5 SHEETS—SHEET 2.

FIG. 2



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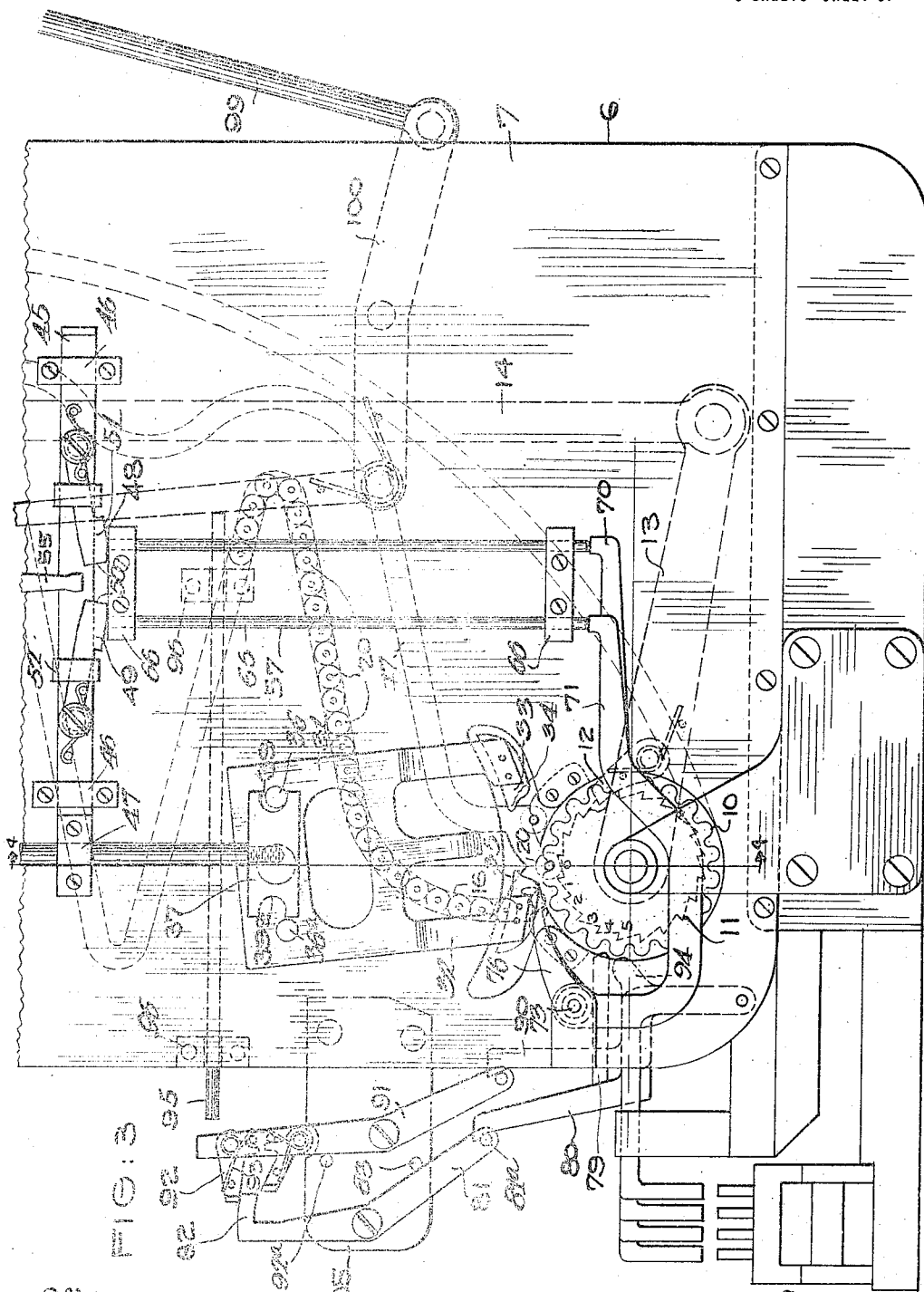
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5 SHEETS—SHEET 3.

1,287,685.



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 CONTROLLER MEANS FOR TYPE CASTING AND COMPOSING MACHINES.

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5 SHEETS—SHEET 4.

FIG. 4.

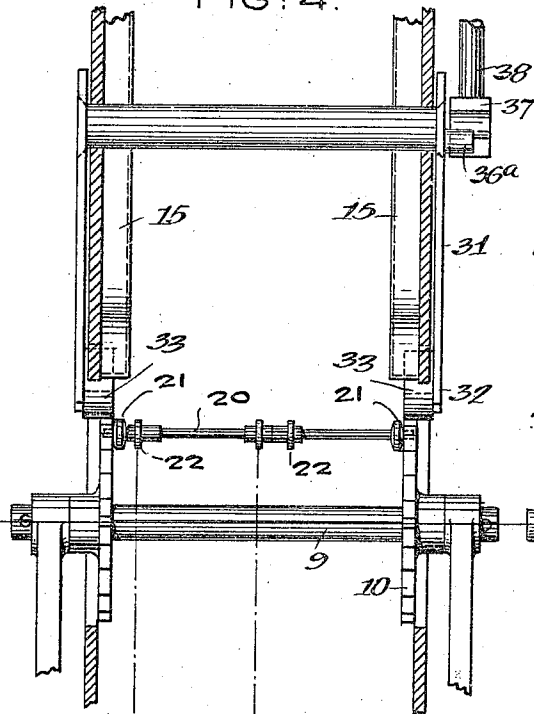


FIG. 6.

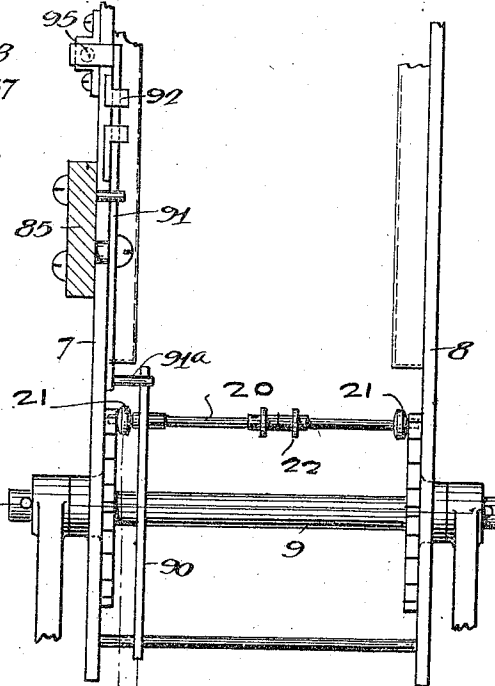


FIG. 5.

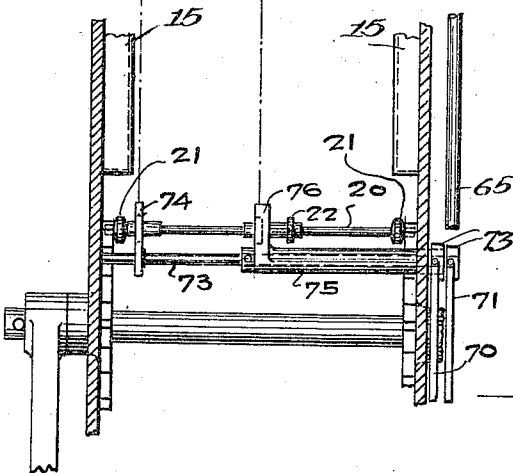
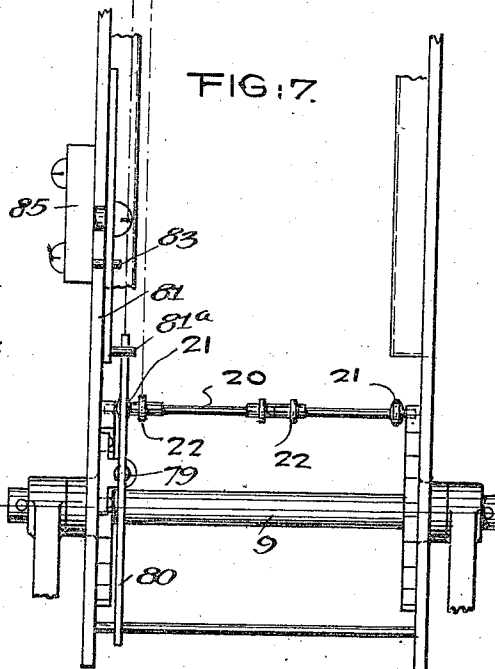


FIG. 7.



Witnesses:

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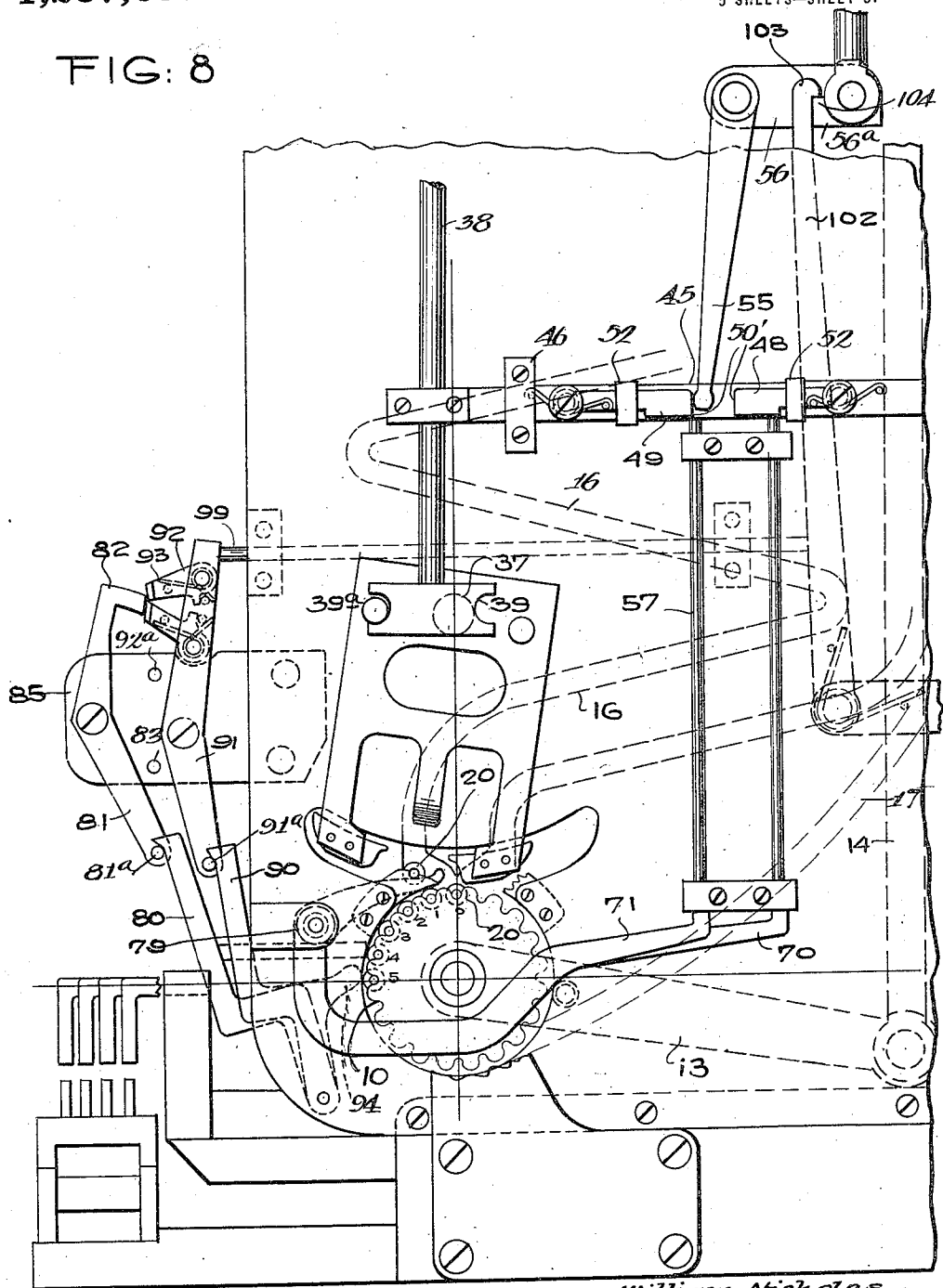
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1,237,685.

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 5 SHEETS—SHEET 5.

FIG: 8



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UNITED STATES PATENT OFFICE.

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CONTROLLER MEANS FOR TYPE CASTING AND COMPOSING MACHINES.

1,237,685.

Specification of Letters Patent.

Patented Aug. 21, 1917.

Application filed July 7, 1914. Serial No. 849,575.

To all whom it may concern:

Be it known that we, WILLIAM NICHOLAS, a subject of the King of Great Britain, residing in the town of Southport, county of Fairfield, and State of Connecticut, and WILLIAM ACKERMAN, a citizen of the United States, residing in the borough of Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Controller Means for Type Casting and Composing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

Our invention relates to that class of type composing machines in which a record is made upon a controlling mechanism employed subsequently to set and actuate type producing means, more particularly having reference to those machines in which separate controller devices are set for casting individual types and spaces, such as described in our joint Patent No. 964,679, having especial reference to the mechanism employed in introducing and operating the devices which govern the orderly casting of the type composing justified lines.

An object of our invention is to provide improved means for selecting from respective channels controller devices in the order required for the justification of the particular line of type to which such controllers relate, both in connection with single and multiple justification of lines of type; and also as a further object to supply improved means whereby controller devices or selectors may be caused to operate in proper sequence with reference to each particular line and to successive lines of composition to be cast and set thereon.

Generally described our mechanism comprises an index head, so-called, similar in general form and operation to that described in said patent, wherein a rotating feed mechanism presents successively different selectors to a mechanism composed of a plurality of electrical contacts operable by the separate selectors in the order in which they are presented by the rotating feed to operate and otherwise control the type casting and setting means.

We therefore employ mechanism for transferring to said rotating feed mechanism selectors drawn from either of two chan-

nels, namely, that in which the "trip" and the character selectors are contained in the order named, and the justifier channel, so-called, in which the justifier selectors are segregated consecutively corresponding to the order in which the selectors of the successive lines are arranged in the character channel. To withdraw selectors from said channels an escapement device is employed, having the same general features of that described in our said joint patent, which is adapted to push the lowermost selector as required from the bottom of either of the two converging sluice-ways or channels in which as noted the selectors of different classes are segregated. The escapement mechanism, as described in said patent, by means of connections with feed wheel actuating means, operates thus to precipitate a selector from one or the other of said channels, at each stepped movement of the feed wheel into which the selectors are thereby dropped, the selectors themselves controlling the selective action of the escapement mechanism. Therefore when a selector having its signal features properly placed for the purpose is carried through the successive stages or operable positions of the index head mechanism, the selectors first engage levers to control the escapement to determine from which channel the next succeeding selector will be drawn, which selector in turn may be similarly prepared or equipped to return the escapement to its original setting, or otherwise as desired. The selectors having performed this first function are carried by the feed wheel to a further stage in the index head to control other features of our invention, namely to trip the justifier cam to actuate the justifier setting and correlated mechanisms, thus having performed the two-fold duties of our improved mechanisms, the selectors are carried by the feeding mechanism to perform the usual functions connected with the casting machine as set forth in our said patents.

In the accompanying drawings illustrative of a preferred embodiment of our invention, Figures 1, 2 and 3 are consecutive partial views of the lower portion of a side elevation of the controller mechanism to which our present embodiment pertains; Fig. 4 is a partial front elevation in section on line 4-4 of Fig. 3, showing trip selector

held by feed wheel; Fig. 5 is a like sectional view of Fig. 3; Figs. 6 and 7 are partial front elevations of the parts shown in Figs. 4 and 5; and Fig. 8 is a partial side elevation of parts shown in Fig. 3 in a moved position.

Referring to the drawings: Figs. 1, 2 and 3 placed one above another in the order named, the last two turned on their sides, illustrate the lower portion of a type casting machine, similar to that described in our joint Patent No. 964,679, Fig. 1, by placing the slide mechanism of Fig. 3 over the corresponding mechanism illustrated in Fig. 2, the slide mechanism in the latter figure being illustrative of a moved position of a portion thereof. The above mentioned figures show a portion of the frame 1 of said machine, having suitably supported thereon a driving shaft 2 upon which are operably attached the several cams employed in operating the machine. Two of the cams of the casting machine are shown in end view in said Fig. 1, namely, the ratchet actuating cam 4 which operates the feed wheel of the index head of the controller mechanism, and the escapement actuating cam 5 which through its connections operates the double actuating escapement device that feeds the selectors into the index wheel.

At the side of the frame 1 of the type setting machine is attached the controller device 6 which has two side walls 7 and 8 comprising two similar plates held in parallel relationship one to the other by means of cross members distributed in various parts of the controller, the plate 7 forming the outer wall of the controller. The side plates 7 and 8 have upon their inner surfaces the channel tracks 15, which form respectively the character channel 16 and justifier channels 17 on which tracks 15 are adapted to run the rolls 21 fixed to the shafts of the selectors 20 near the respective ends thereof, three slidable collars 22, having been also provided upon each of said selectors by means of which the usual type casting and setting operations are controlled. The channels 16 and 17 follow separate courses from the upper portion of the controller where the selectors are set by the operation of mechanism controlled at the keyboard, which is fully described in our said patent, said channels converging at the bottom of said controller side plates at a point immediately above the feed device which comprises at either end thereof a toothed wheel adapted to receive the respective ends of the shaft of the selectors as they are precipitated into the recesses provided therein for the purpose. The respective recessed wheels 10 of the feed device are secured to a shaft 9 which has its bearings in the respective side plates 7 and 8, upon which shaft is also secured a ratchet

wheel 11, into which is adapted to fit the toothed end of an actuating pawl 12 yieldably supported upon an arm 13 pivotally mounted upon the feed wheel shaft. The arm 13 is operably connected by means of a rod 14 which is attached at its opposite end to a bell crank lever 23 pivotally mounted upon the side of the frame 1 having the cam roll 24 upon the cam actuating arm 23^a thereof. A spring 25 coiled about a suitable stud 25^a projecting from the side of the frame 1 having one end held by a pin similarly projecting from the surface of the frame, having its other end bearing against a lug suitably provided upon the short arm 26 of the bell lever 23, operates to press the cam arm 23^a in the direction of the cam 4 bringing the roll 24 into contact with the periphery thereof, so that as the cam 4 is rotated by the driving shaft of the casting machine, it is adapted at each rotation to rock the cam lever upon its pivotal bearing forward and back, thereby lifting the rod 14 to operate the ratchet pawl 12. The cam 4 is accordingly constructed so as to carry the ratchet wheel circumferentially the distance of one tooth for each rotation of the driving shaft, so that the feed wheel device will continuously present an unoccupied receiving notch at the point of delivery of selectors from the selector containing channels, which selector receiving point is conveniently termed the zero position of the feed wheel, from which in the order of progression from said zero position the selector passes successively through positions #1, #2, #4 and #5 (see Fig. 8), in certain of which positions occur the signaled actuations by the selectors as they pass through the index head mechanism, which will presently be explained more in detail in connection with first, the escapement reversing mechanism, and secondly, the "trip" mechanism so called, which controls the operation of the justifier setting cam.

But before proceeding to a detailed description of these mechanisms, it may be pointed out that all selectors in our present invention, as in that of our said joint patent, are designed to set the escapement mechanism to withdraw the character selector from the character channel thereof at each successive rotation of the driving shaft unless a selector specially prepared for the purpose operates to the contrary. That is to say, a trip selector must be present to set the escapement mechanism to withdraw the justifier or other special selector from the so-called justifier channel, whereupon, such justifier or other special selector having been withdrawn from the "justifier" channel the escapement is immediately thrown back to the normal withdrawal of character and trip selectors.

As already seen, in the matter of its construction and operation, the selector 20 here employed is the same as described in our said patent, comprising a straight shaft of 5 small diameter having two small rolls 21 near its ends permanently secured thereto, between which are the three sliding collars 22, which are variously set in accordance with the requirements of the casting machine as has been fully explained in our 10 said joint patent. The collar upon the trip actuating selector called the "trip" selector is set in the fifteenth position on the left hand or "individual" side of the selector, 15 for the reason, as pointed out in our said patent, that none of the other operations of the machine are designed to be operated with a selector collar set in that particular position. The "justifier" selector simply 20 employs the collar in the central "position" common to all selectors.

The selectors, therefore, necessarily employed in connection with our present invention comprise the trip selector, the justifier 25 selector which operates in the usual manner of the justifier selector of the previous inventions, and incidentally the character selectors which follow the justifier selector in the usual order. Lines made up of such selectors require that the trip selector be first 30 fed into the index head to be followed immediately by the justifier selector, or other special selectors as the exigencies of each case may require, and then the usual character selectors follow. It is not possible, however, as has been pointed out in our said 35 patent, to prepare the selectors in such consecutive order for the reason that the character selectors must necessarily be prepared before the justifier selector could be prepared, due to the fact that the justification cannot be ascertained until it is known what characters have been selected to make up 40 the line. Therefore it has been the practice to turn the character selectors into one channel and the justifier selectors and other special selectors which are required to precede the character selectors, such as line canceling, and the multiple justification selectors, into a different channel which are conducted 45 to the common point of delivery into the feed wheel of the index machine as above described, where the respective character and justifier selectors may be used in the order required, that is, so that the justifier selector may be introduced into the index head 50 in advance of the characters composing the line to which that justifying selector relates. For that specific purpose, namely for changing the escapement mechanism in the manner indicated, a trip selector is each time inserted in the character channel before the character selectors so that when the trip selector reaches the index head, it will automatically close the channel immediately af-

ter it has passed therefrom, preventing the character selectors from falling, at the same time the trip selector being employed automatically to open the justifier channel so that the justifier selector will be the next 70 one to enter the feeding mechanism of the index head. The escapement mechanism being set to this end and remaining in such position until the justifier selector is introduced into its channel, if one is not immediately ready. When a justifier selector enters the feed wheel, whether immediately or eventually and passes into the mechanism of the index head, that selector in turn throws 75 the escapement mechanism back into its normal position to permit character selectors being fed into the index head, simultaneously closing the justifier channel to prevent other justifier selectors from entering the feed wheel until the next succeeding trip 80 selector leading its column of character selectors is carried into the feed wheel, whereupon the justifier channel is again opened by action of a trip selector as above pointed out. I shall now describe more in detail 85 the operation of the mechanism whereby this end is attained.

The escapement mechanism having been fully described in detail in our said patent, will be here referred to with regard only to 95 its more general features, of which it comprises a depending device having similar members 31 which are fixedly attached to a shaft extending through the controller walls loosely mounted therein, the said 100 members 31 being adapted to swing freely upon said shaft alongside the outer walls of the respective plates 7 and 8 accordingly. Each of said members is bifurcated, that is, has two downwardly extending arms 32 with in- 105 turned offset portion 33 extending through circular slots suitably disposed in said controller walls 7 and 8. The arms 32 are so designed that they present offset portions 33 at both sides of one or the other of said 110 channels 16 and 17 so that when in position to intercept the selectors in one of the channels, the other is open to the passage of selectors therefrom, and vice versa. The offset portions 33 have pointed projections 34 115 at their inner ends, which when said portions are thrust across the respective channels from the rear sides thereof, they will enter between the shafts of the two bottom selectors 20 in the channel to which they 120 relate, and as they are carried forward they will push the lowermost selector therefrom into a central position immediately over the feed wheel 10 in the zero position above referred to, whence it drops into the similar 125 and oppositely disposed receiving recesses of the feed wheels 10. While the corresponding members 33 are thus pushing the lowermost selector into the index wheel, it is holding upon its upper surface 35 the se- 130

lector immediately above the one that has been thus ejected, and will in this manner support the column of selectors in the respective channels containing the same until the return motion of the escapement member, withdrawing the same beyond the shaft of the selector, whereupon the column of selectors drops bringing another selector into position to be contacted by the forward ends of the members 33 to be ejected thereby in the manner described. But on the other hand, if after ejecting a justifier selector, for example, the escapement action is reversed the top surface 35 having been prolonged sufficiently for the purpose will continue to support the selectors in the justifier channel while the selectors are being ejected from the other channel, namely, the character channel. The escapement mechanism has, therefore, been so designed that when the corresponding arms 32 of the two members 31 are operating to eject a selector from one of the channels, the upper surface 35 of the opposite pair of escapement members is reciprocating beneath the column of selectors in the other channel.

We will now describe the means whereby the escapement device is operated in the one position or the other, and also with the mechanism by means of which it is shifted from the one channel to the other by the reaction of the selectors upon the mechanism of our invention.

Upon the outer side of one of the members 31 in transverse alinement with the supporting shaft thereof, are two studs 36, 36^a which rest in a horizontal line when the escapement member is in its normal position, *i. e.*, neutral with reference to two channels 16 and 17. Between the studs 36, 36^a is a block 37 at the end of a rod 38 having at its two sides semicircular notches 39, 39^a, each of which is adapted to receive within its concave recess a stud 36 upon the member 31 when at the proper level and thrust in the direction thereof, the escapement member 31 being in its normal vertical, or neutral position. We will next describe the means by which the block is shifted from one to the other of said studs.

The rod 38 is pivotally suspended from one end of the arm 40 which is pinned to a shaft 42 which extends through the controller to the inner wall 8, and has pinned thereon at its other end the longer arm 43. The short arm 40 is rocked on its shaft by means of the rod 14 which as has been seen operates the lever upon which is the actuating pawl of the feed wheel by means of a transversely slotted block 41 upon said rod into the slotted bearings of which the rounded end of the long arm 43 of said lever 40 is adapted to fit loosely. Hence, when the block 37 is in engagement with one or the other of the studs 36, the escapement

device 30 will be swung either to the one side or the other, dependent upon to which of said studs the block 31 is attached, when the rod at each rotation of the line shaft is elevated into either the position shown in Fig. 3, or tilted oppositely as in Fig. 8.

The mechanism for shifting the block 37 from one to the other of said studs 36, to control the direction of the movement of the escapement members 31, comprises a horizontally moving slide 45 which is suitably supported in brackets 46 upon the wall of the controller, having at its end the bearing 47 in which the rod 38 is adapted to slide, the rod being held in said bearing by means of the cap thereon. Upon the side of the horizontal slide 45 are pivotally secured two fingers 48 and 49, which have their free ends 50 oppositely disposed between abutting surfaces of which extends the suspended lever 55; that is pivotally mounted upon a stud extending from the outer wall 7 of the controller and is adapted to be alternately swung in the direction of the ends 50 of said fingers 48 and 49. The end of the lever 55 will pass over the tops of said fingers freely when they are in the position shown in Fig. 3, but is adapted to impinge against the end of either the one or the other when it has been lifted into the position of the finger 48 as shown in Fig. 2. The lever 55 has a short lever arm 56, which is operably connected to a rod 57 that is pivotally suspended from the short end of a cam lever 58 suitably mounted upon a stud upon the frame of the type casting machine, being operably held by a spring with its roll 59 resting upon the periphery of the cam 5 upon the driving shaft 2. Hence as the cam 5 is so arranged and positioned on the shaft 2 that on each rotation thereof it will cause to reciprocate the bar 45 in both directions while the rod 38 is in its lowermost position, the rod 38 through its connections as described being also operated by a cam on the main driving shaft 2. It has been seen that the two studs 36 and 36^a are opposite the notches 39 and 39^a corresponding thereto when the rod 38 is thus in its low position, so that when one or the other of the fingers 48 and 49 shall have been elevated into the path of the swinging end of the lever 55, the block 37 will accordingly be carried into engaging relationship with one or the other of said studs, and thereupon the rod 38 will immediately lift the block 37 to swing the escapement device 30 to the one side or the other, that is, to eject selectors from the character or the justifier channels.

The means for elevating said fingers 48 and 49 or either of them, comprises two vertical rods 65, which are suitably mounted in sliding bearings in brackets 66 upon the outer wall 7 of the controller, having their

upper ends terminating immediately below the under surface 51 of said fingers, respectively, which rods when elevated, as shown in Fig. 2 relative to finger 48, raise the corresponding fingers into a horizontal position upon the slide 45, said fingers 48 and 49 held in operable position on said horizontal slides by laterally guiding brackets 52, which fingers have at their respective bottoms the stop surfaces 53 against which the fingers are normally pressed by action of their own springs 54. The respective rods 65 are elevated at the time required by means of the levers 70 and 71 suitably mounted in the index head mechanism in the manner presently to be described, the broadened ends 72 thereof (see Fig. 5) being adapted to contact the bottom of the respective rods 65. The bent levers 70 and 71 also have two actuating or contacting fingers 74 and 76 (see Figs. 3 and 5), similar in form but differently located, being held in position to be contacted in turn by the selectors as they are carried through their respective positions by the feed wheel 10.

The outer or shorter arm 71 is pinned to its shaft 73 which is loosely supported in bearings, one of which is provided in the wall 8 of the controller, and having its other bearing in the sleeve which is similarly supported in the outer controller wall 7. The shaft of the lever 71 is suitably disposed in operable parallel arrangement with the feed wheel 10, said levers being attached to the outer extension of said shaft 73, upon which is also rigidly attached the controller contacting finger 74, in such a position that it will contact the collar 22 of a selector 20 when the latter is in the 15th "individual" position of the trip selector, while resting in the feed wheel 10 as the same passes from the zero into the 1st position above described.

Loosely mounted upon the shaft 73 of the lever 71 is the sleeve 75 as seen to which is secured the longer or inner arm 70 which sleeve is in turn journaled in suitable bearings in the outer wall 7 of the controller, as already pointed out. The sleeve 75 has upon its opposite end a selector contacting finger 76 similar to the finger 74 above referred to, adapted to engage the collar on a "justifier" selector 20 while being carried into the first position of the feed wheel in the manner described in connection with said finger 74, but the finger 76 being placed in a position to be contacted by a collar 22 when in the central portion of the selector, which, in the machines to which our mechanism applies is only slightly moved on the shaft of the selector for the purposes of the type casting machine, and therefore the finger 76 is given sufficient width to contact this collar in whichever position it may occupy; so that all selectors that pass through the index

head will contact the finger 76 of the lever 70 as they pass into position 1, whereas the contact finger 74 of the lever 71 will only be engaged by a collar that has been especially set in the 15th individual position for that specific purpose.

Hence, when other than a trip selector, that is, one not having its collar in the 15th individual or trip position, is brought into position 1 in the index wheel, the lever 70 alone will be elevated, which through the rod 65 will lift the contact finger 48 into engagement with the swinging end of the arm 55, so that the horizontal slide 45 will be thrown in the direction to carry the block 37 on the rod 38 into contact with the stud 36 on the escapement and that member will be carried to the position shown in Fig. 3, when it will be in position to deliver character selectors from the character channel 16. Should the selector thus carried into position 1 of the feed wheel, however, have a collar in the 15th individual or trip position, the contact finger 74 will be engaged thereby, and the shorter or outer lever 71 will now be elevated and through its corresponding rod 65 will lift the finger 49 into engagement with the lever 55 in the same manner as described with reference to the other finger 48, so that the horizontal slide 45 will thereupon be carried into the opposite direction so as to bring the notch 39^a of the block 37 into engagement with the stud 36^a, with the result that when the rod 38 is elevated the escapement device will be thrown into position shown in Fig. 8 ready to eject the justifier selector at the return or downward stroke of the rod 38. Inasmuch as the fingers 48 and 49 are forced by their springs downwardly upon the rods 65 until they come against corresponding stops provided in the guards 52, the fingers will immediately fall into the positions shown in Fig. 3 upon the selector passing out of the first into the second position of the index wheel; consequently the movement of the lever 55 having been synchronized with the downward motion of the rod 38, so that the horizontal slide 45 reciprocates only when the rod 38 is in its lowermost position, the block 37 may be shifted back and forth in the manner described so long as the rod 38 remains in such downward position, without affecting the results to be attained thereby. It therefore is required, inasmuch as both contact fingers 74 and 76 are engaged by a trip selector, that the "trip" collar engaging finger should control finally and therefore the movement of the rod 38 must be so timed that it will lift the escapement finger when the rod 55 is in proper position to carry the block 37 into engagement with the stud 36^a, and accordingly both fingers 48 and 49 being thus elevated by the trip selector, the result will be that the slide 45

will be left in the same position as if the finger 49 only had been elevated. But in the case of all other selectors being brought into position 1 by the feed wheel, only the stop finger 48 will be lifted so that the swinging lever 55 will carry the slide 45 in the direction of said finger 48, whereby operable engagement is made with the stud 36 of the escapement device and the slide 45 is left therefore in such position indefinitely or until another trip selector enters the feed wheel to reverse the relative position of said parts, in order to select a justifier controller which in turn, as above pointed out, again restores the parts to the character side or normal status of the escapement.

As operated in connection with our present invention, the feed wheel carries the selector from position 1 in which they have operated the escapement device as in the manner described into position 4 without further affecting the mechanism. But in being carried into position 4 (see Figs. 6, 7 and 8) the collar 22 of every selector will impinge against the end of a sliding rod 79 loosely mounted to slide longitudinally within bearings in the casing of the index head rigidly attached to the frame 1 of the machine, the opposite end of the rod being adapted to strike against a lever 80 which may conveniently be termed the first actuating trip lever 81 which is pivotally mounted upon a stud projecting from the interior surface of the inner controller wall 8 upon which stud is the second or interponent trip actuating lever 90, the function of which will presently be explained. The trip actuating lever 80 is adapted to contact a pin 81^a projecting laterally from the lower arm of the fulcrum lever 81, which has a hammer head 82 at its upper end. This lever 81 which may be termed the hammer lever, is normally held by means of a spring against the stop 83 on the bracket 85 which extends outwardly from said inner wall 8 and upon which said lever 81 is pivotally mounted and will be rocked, upon its fulcrum support away from said stop, each time a selector of any kind passes into position 4 of the index head through the action of the selector collar upon the short sliding rod 79, and will be thus actuated idly except when another lever 91 also loosely mounted upon the bracket 85 immediately in front of said hammer lever 81 is interposed between the hammer 82 and a horizontally sliding rod 95 to actuate the trip mechanism of the justifier cam as will be presently described more in detail. The means provided whereby the hammer lever 81 contacts the trip interponent lever 91 is peculiarly adapted to the specific function thereof comprising the features next to be described.

The interponent trip lever 91 is held by

spring action against a stop 92^a on the bracket 85 in substantially the same manner as the lever 81 is held against the stop thereof, so that the two levers are held in definite operable relation one to the other. The lever 91 has upon its upper arm a spring yielding member 92, having the coil spring 93 engaging a stop on the side thereof by means of which its outer end is held against the top surface of the hammer head 82 of the lever 81, the lever 91 being held against its stop 92^a in the bracket 85 by means of a spring in such position that the member 92 will normally rest upon the top of the hammer head 82, but not engaged thereby as the hammer head 82 is carried forward in the manner described. However, upon carrying the lever 91 away from its stop 92^a, a slight distance in advance of the lever 81, the yielding member 92 by action of its spring will drop into engagement with the end of the hammer 82, whereupon the lever 91 will be carried forward by action of the lever 81 to the extent of impinging against the outer end of the horizontal rod 95 which in a manner presently to be explained operates to connect the parts shown by means of which the trip is operated to throw the justifier cam into engagement with the driving shaft of the type casting machine.

The means by which the lever 91 is thrown into such engaging relationship, with the hammer lever 81 comprises the lever 90 which may be termed the secondary grip actuating lever which it has been seen is mounted upon the same bearing as the first grip lever 80 above described, which has the contacting arm 94, normally held in position to be contacted by a trip collar when in its 15th or trip position on the selector as shown in Fig. 6, so that as the trip selector is carried into position 5 of the feed wheel, it will cause the lever 90 to rock upon its pivotal bearing until its upper end strikes a pin 91^a projecting from the lower arm of the interponent lever 91, thereby tipping the lever 91 sufficiently to permit the yielding member 92 to drop in front of the hammer 82 in the manner above described, in which position the lever 91 will remain until acted upon by the hammer lever to force it against the horizontal trip actuating rod 95 to connect the justifier cam to the driving shaft as described. The selector thus actuating the hammer lever 81 may be any selector whatsoever for the reason that the lever 90 is operated by the collars which of course are common to all selectors.

If it should happen that a trip selector should enter into position 5 simultaneously with another selector being carried into position No. 4, so that both levers 80 and 90 are actuated at the same time, it is provided that the arm of the lever 91 which has the

yielding member 92 be given greater throw than the corresponding hammer arm of the lever 81; and furthermore the opposite arms of the said levers 81 and 91 are likewise of different operable lengths, that of the lever 91 being slightly shorter than the corresponding lower arm of the lever 81, so that the top of the lever 91 will travel faster than the hammer end of the other lever with the result that the yielding member will be dragged off from the top of the hammer end 82 falling into the path thereof by action of its spring before the lever 91 reaches the end of the horizontal rod 95, and hence this rod will be operated in such case in the same manner as if the lever 91 were first operated and then the hammer lever 81 brought against it, as in the first mentioned order of operation.

The horizontal rod 95 is suitably supported in brackets 96 on the side wall of the controller, and is adapted to slide longitudinally therein, one end of which as seen is adapted to be contacted by the end of the lever 91 by means of which the proper connections are made for operating the trip mechanism which starts the justifier cam to perform its operations in accordance with the prearrangement of the selectors designed to control the operation thereof.

The justifier cam it is understood performs as its primary duty the function of setting the justifier parts at the commencement of the casting of each line of type. This operation thus occurring before the character type are cast must be controlled by a justifier selector that precedes the selectors which control the casting of the character type. Inasmuch as each justifier selector is withdrawn from a separate magazine channel by operation of a trip selector, such trip selector must necessarily precede both the justifying and character selector in their entrance into and passage through the index head. Consequently, when the trip selector is carried into position No. 5 by the feed wheel it places the interponent lever 91 into the proper initial relationship to start up the justifier cam but does not actually effect the tripping of the cam of its own motion for the reason that the justifier selector for that particular line may not yet have been set. Hence the character selectors are held in abeyance until their justifying selector comes into position to be deposited into the feed wheel, whereupon the character types are immediately released and follow the justifier selector into the feed wheel, the first of which, the justifier selector, as has been explained, upon reaching the position No. 4 of the index feed wheel, contacts the arm of the so-called first trip actuating lever 80 which in turn actuates the hammer lever 81 to impinge upon the interposed trip lever 91.

The lever 91, as already pointed out, having been previously set by the trip selector entering position #5, to trip the cam when struck by the hammer lever 81, the said lever 91 is therefore in readiness to be actuated by the justifier selector to trip the justifier cam in the manner described as soon as the justifier selector is carried by the feed wheel to position #4 therein.

The mechanism employed for thus tripping the cam 3 to which all the correlated acts of setting the justifier parts pertain have been fully explained in our said joint patents, and will therefore not be again detailed in this connection, except to point out that a spring actuated clutching arm 96^a on the justifier cams is normally held out of engagement with a coacting clutch member on the main shaft (not shown) by means of a fulcrum lever 97 pivotally supported upon a stud conveniently projected from the frame of the machine. The lever 97, therefore, is adapted to be rocked in a plane at right angles to that in which the arm 96^a oscillates, so that when tilted upon its pivotal bearing the long end of the lever 97, which extends upwardly to contact said clutch arm, is carried away from the arm 96^a thereby effecting the clutching of the cam to the driving shaft. To rock the lever arm 97 thus out of contact with the arm 96^a, a short arm 98 extends from the hub of the lever from which is operably suspended the rod 99, which is attached at its lower end to a fulcrum lever 100, pivotally supported upon a stud 101 upon the inner wall 8 of the controller. Pivottally mounted upon the other end of the lever 100 is an upright member 102 having a hooked end 103 which is adapted to be engaged by a correspondingly formed catch 104 on the short arm 56 of the swinging lever 55. The lever 55 it has been seen is operated continuously by the cam 5 on the driving shaft, and is therefore in proper timing therewith relatively to the step by step rotation of the feed mechanism to operate in conjunction therewith, for the purpose of connecting the justifier to the driving shaft. Consequently by connecting the hooked member 102 with the arm 56 at the time the justifier selector has been fed into the position #4 the tripping of the justifier cam will occur at the proper point to effect the setting of the justifier parts. Hence we have provided the horizontal rod 95 above referred to, which, when contacted by the interponent lever 91 will be caused to press the hooked member 102 to engage the catch 104 on the lever arm 56 when the latter is in its lowermost position, as shown in Fig. 2, so that as the latter is again carried upwardly when the cam 5 rotates, the trip rod 99 will be drawn down to vibrate the lever arm 98 to release

the clutch arm 96, thereby starting the justifier cam upon its rotation.

Having described our invention, what we claim is:

- 5 1. In a record controlled type casting and composing machine of the class described, having selector devices for controlling the casting operations and differently prepared
10 selectors for controlling the justifier setting mechanisms, the latter selectors comprising a justifier selector for controlling the justifier setting mechanism, trip selector for controlling the justifier selector, magazine channels for said selectors, justifier selectors in
15 one channel and the character and trip selectors in a different channel; an index head and means for feeding said selectors from said channels therinto; and mechanically operated means for closing said character channel and opening the justifier channel upon a trip selector being fed into said
20 index head, said means comprising levers controlled by said selectors for variously setting the escapement mechanism and other levers set by said selectors for controlling the justifier setting mechanism.

2. In a record controlled type casting and composing machine of the class described,

having selector devices for controlling the casting operations and differently prepared
30 selectors for controlling the justifier setting mechanisms, the latter selectors comprising a justifier selector for controlling the justifier setting mechanism and a trip selector for controlling the justifier selector, magazine channels for said selector justifier selectors in one channel and the character and trip selectors in a different channel; an index head and means for feeding said selectors from said channels therinto; and mechanical means for closing said justifier channel and opening said character channel when said justifier selector is fed into said
40 index head, comprising levers for adjusting the escapement mechanism and other levers set by said selectors for controlling the justifier setting mechanism.

In testimony whereof, we have hereunto set our hands in the presence of two subscribing witnesses.

WILLIAM NICHOLAS.
WILLIAM ACKERMAN.

Witnesses:

EDITH ENNISSON,
JAMES ENNISSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."