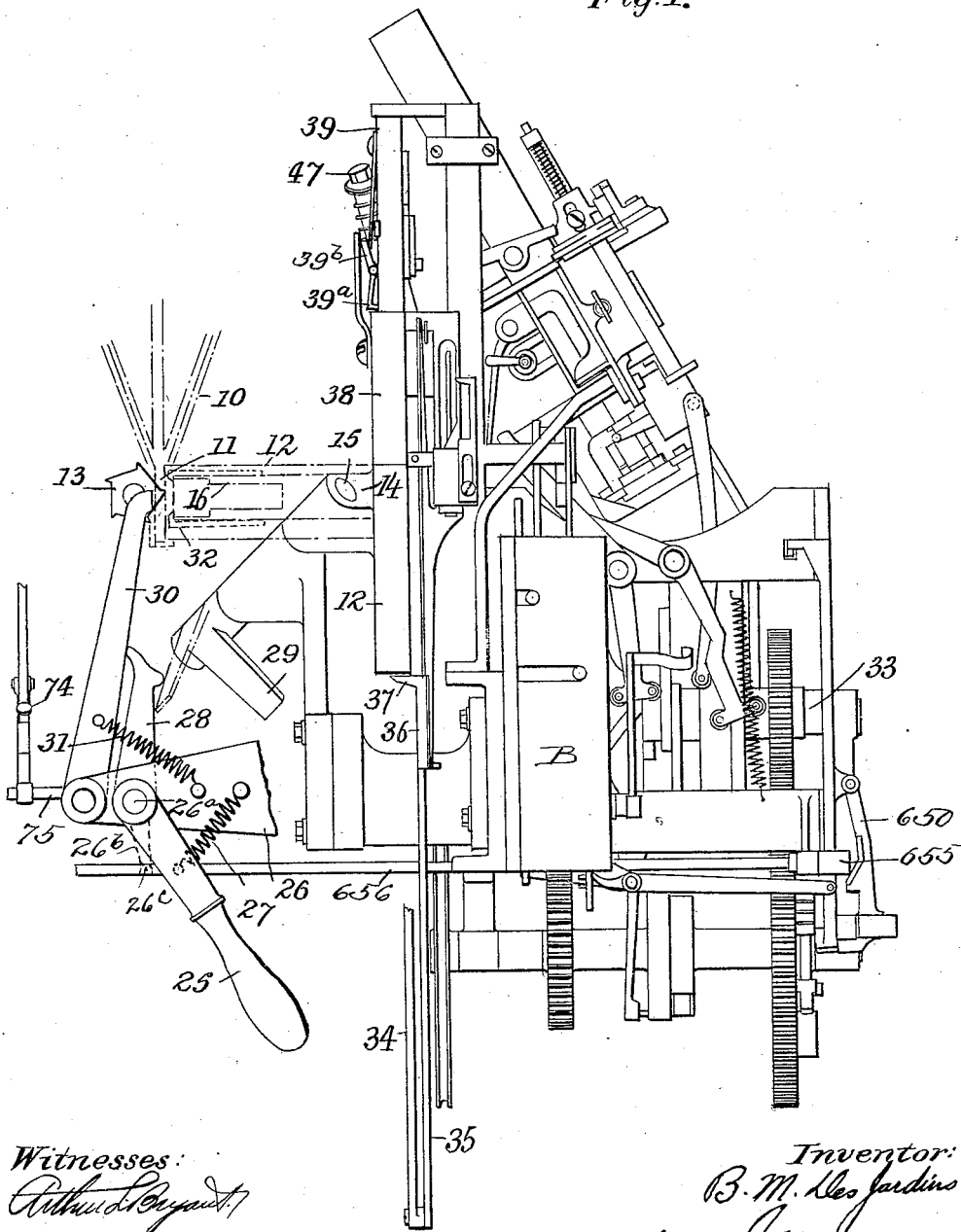


B. M. DES JARDINS.
 TYPE SETTING AND JUSTIFYING MACHINE.
 APPLICATION FILED DEC. 13, 1902.

935,968.

Patented Oct. 5, 1909.
 8 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Arthur L. ...
J. J. ...

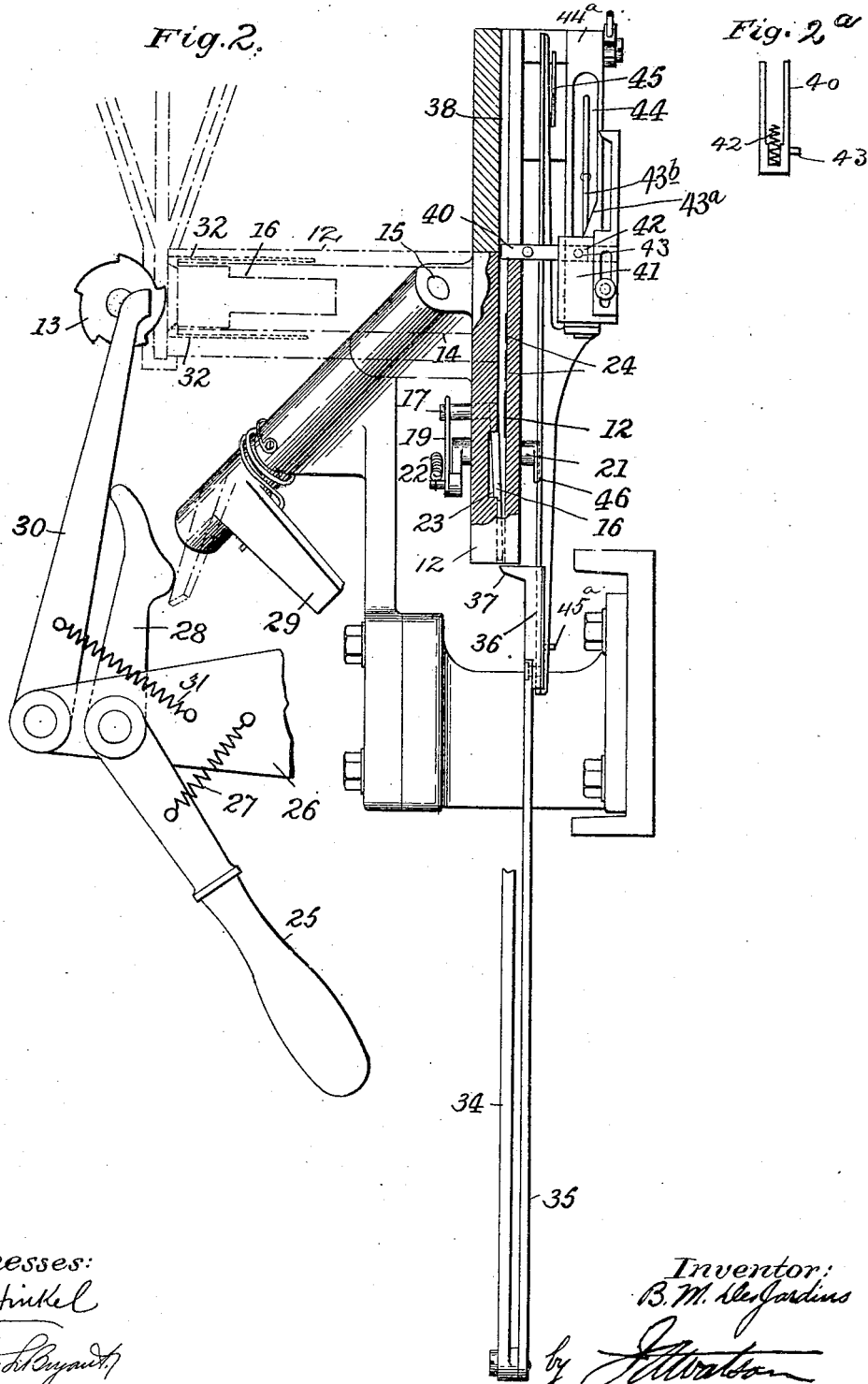
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8 SHEETS—SHEET 2.



Witnesses:
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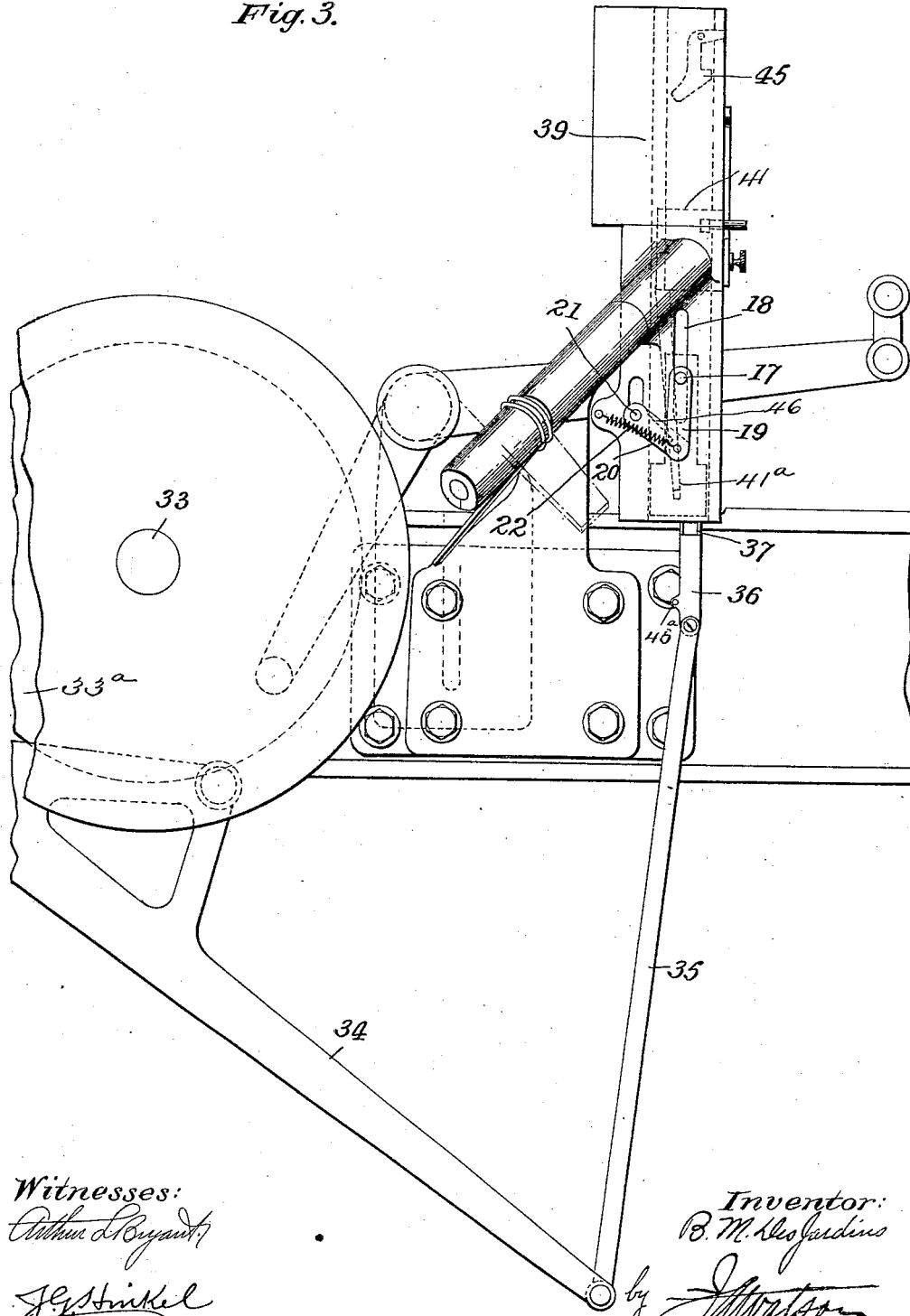
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 8 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
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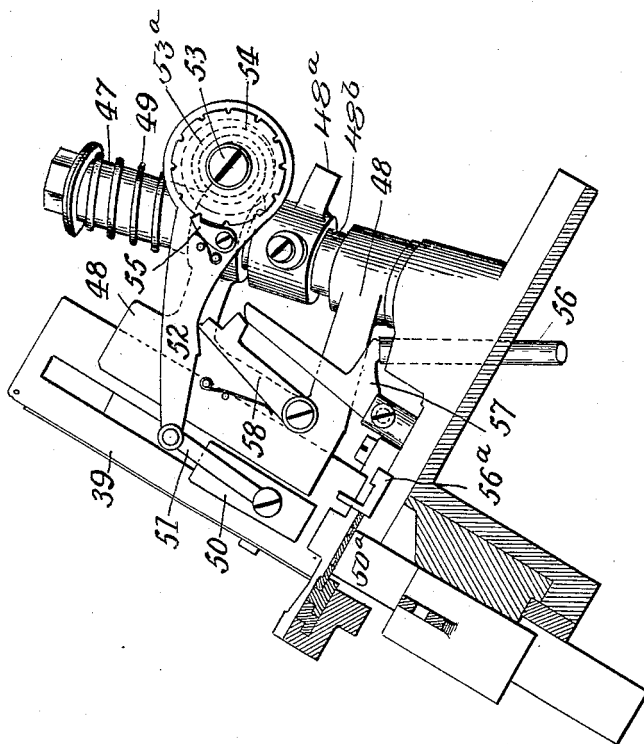
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935,968.

Patented Oct. 5, 1909.
8 SHEETS—SHEET 4.

Fig. 4.



Witnesses:

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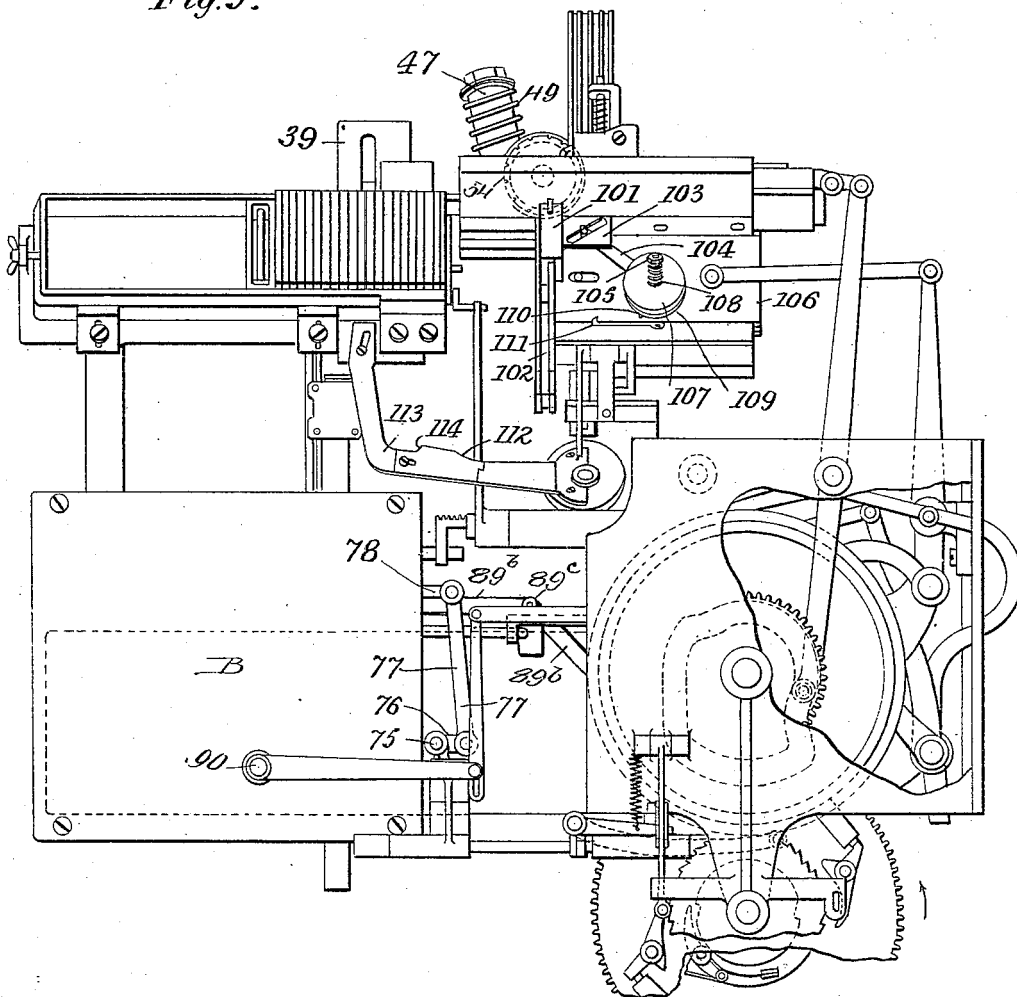
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Patented Oct. 5, 1909.

8 SHEETS—SHEET 5.

Fig. 5.



Witnesses:

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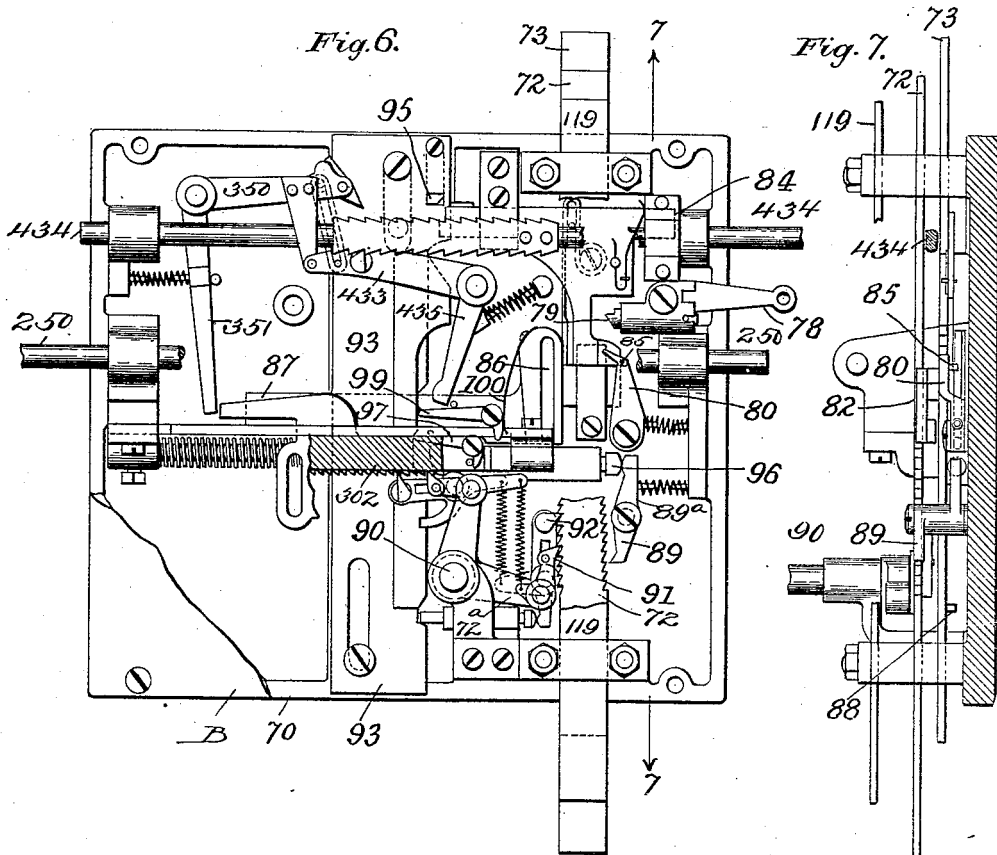
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B. M. DES JARDINS.
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 APPLICATION FILED DEC. 13, 1902.

935,968.

Patented Oct. 5, 1909.

8 SHEETS—SHEET 6.



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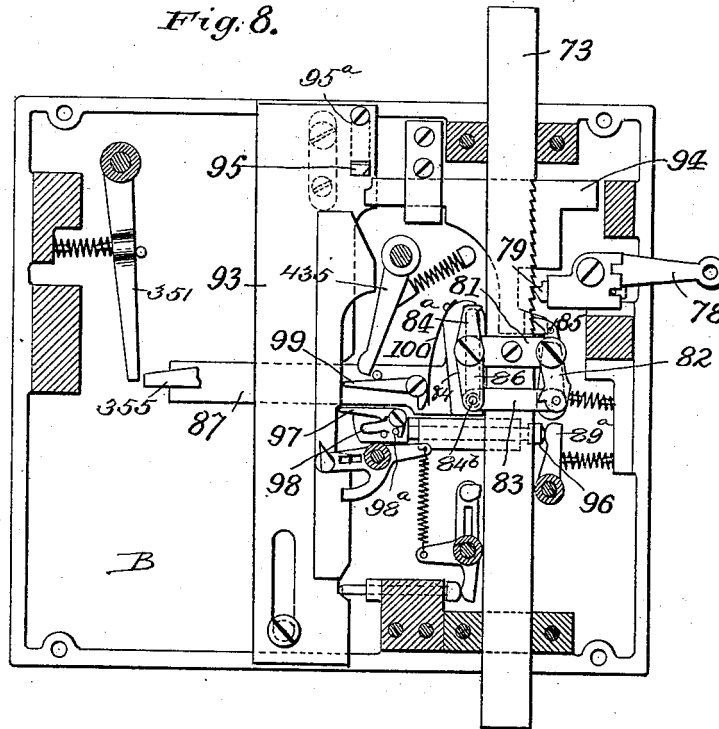
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 TYPE SETTING AND JUSTIFYING MACHINE.
 APPLICATION FILED DEC. 13, 1902.

935,968.

Patented Oct. 5, 1909.

8 SHEETS—SHEET 7.

Fig. 8.



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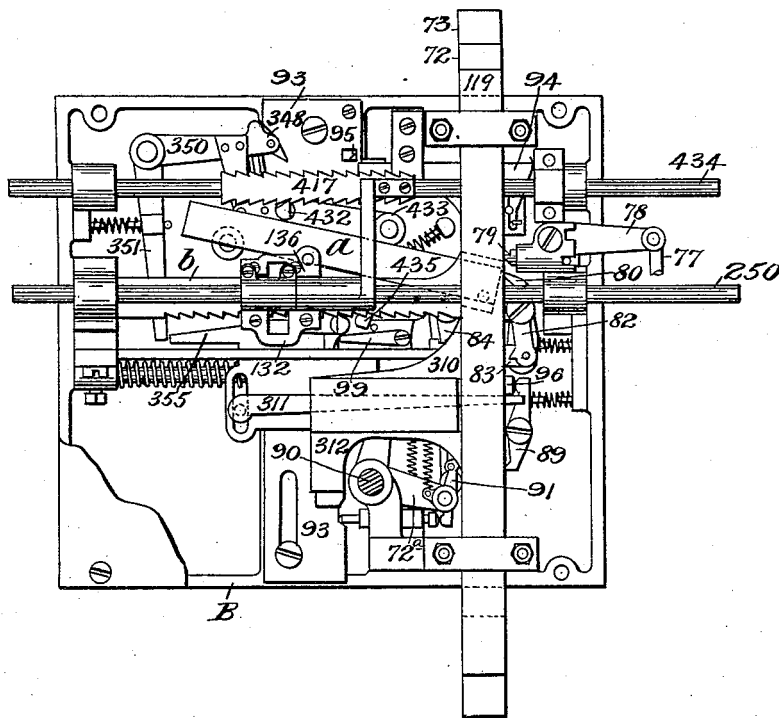
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B. M. DES JARDINS.
 TYPE SETTING AND JUSTIFYING MACHINE.
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935,968.

Patented Oct. 5, 1909.
 8 SHEETS—SHEET 8.

Fig. 9.



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UNITED STATES PATENT OFFICE.

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TYPE SETTING AND JUSTIFYING MACHINE.

935,968.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed December 13, 1902. Serial No. 135,114.

To all whom it may concern:

Be it known that I, BENJAMIN M. DES JARDINS, a citizen of the United States, residing at West Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type Setting and Justifying Machines, of which the following is a specification.

This invention relates to various improvements in typesetting and justifying machines and for the purpose of present application I will illustrate and describe the improvements as applied to the machine illustrated and described in United States Letters Patent No. 844,564, dated February 19, 1907. In the present application I shall describe only such portions of the machine as are intimately related with the improvements, it being deemed unnecessary to fully describe and illustrate the entire mechanism, which is necessarily complicated.

Referring to the accompanying drawings: Figure 1 is a front elevation of a portion of the machine; Fig. 2 is a portion of Fig. 1 enlarged, parts being shown in section; Fig. 2^a is a detail plan view of a portion of the arms 40; Fig. 3 is a left side view of part of the machine; Fig. 4 is a rear elevation of part of the line transferring mechanism; Fig. 5 is a right side elevation of the machine with parts removed; Fig. 6 is a side view of the computing mechanism for the justifier; Fig. 7 is a sectional view on the line 7-7 of Fig. 6; and Fig. 8 is a view similar to Fig. 6, with parts removed to show more clearly the mechanism in the rear. Fig. 9 is a view corresponding to Fig. 14 of my Patent No. 844,564 above referred to, showing the computing mechanism with the present improvements.

The first part of the present invention relates to the mechanism for receiving the line of type from the typesetting machine and transferring it to the re-spacing devices which insert in the line the final justifying spaces.

Referring to Figs. 1 to 4 inclusive of the drawings, 10 indicates the converging channels of an ordinary typesetting machine through which the type usually pass to an assembling point 11 after being released by the keys. The type are forced into an assembling channel 12 by a "packer" 13. The assembling channel is carried by an arm 14

mounted on an axis 15 which is arranged at an angle suitable to the required position of the channel for receiving and for discharging the line. As illustrated in Figs. 1 and 2 the channel is shown in full lines in vertical position and in dotted lines in horizontal position, the latter being the position in which it receives the type. The type are forced by the packer against a T-shaped preceder 16 which is permanently contained within the assembling channel. Upon the inner end of the preceder is a pin 17 extending through a slot 18 in the channel wall. This pin is connected by a link 19 with a pivot arm 20 upon a rock-shaft 21. A spring 22 tends to hold the arm 20 and the preceder in one or the other of their extreme positions, one of said positions being that in which the preceder is flush with the outer end of the assembling channel and ready to support the first type of the line when it is inserted by the packer. As the type accumulate in the line, the preceder is pushed back and when the arm 20 passes the "dead center" the spring throws it over to the other extreme carrying the T-head of the preceder to a position opposite a recess 23 in the channel wall. The leverage of the link 19 on the pin 17 acts to throw the preceder into said recess. The automatic forward movement of the preceder after the arm 20 passes the dead center carries it away from the line and prevents the obstruction of the channel during the time the preceder is moving into the recess. The type are prevented from being disarranged during the movement of the channel 12 by thin plate springs 24 arranged within said channel. When sufficient type to form a line have been assembled in the channel 12 the starting lever 25 (Figs. 1 and 2) is operated. This starting lever is mounted on a shaft 26^a supported in a bracket 26 and normally held in the position in Figs. 1 and 2 by the spring 27. An arm 28 of the starting lever engages an arm 29 on the channel shaft 15 and rocks said shaft throwing the channel in the vertical position. The arm 28 is sufficiently broad to engage arm 29 in all of its positions. With the axis 15 at the angle shown, the channel, at the same time that it is thrown from the horizontal to the vertical position, is rotated ninety degrees on its longitudinal axis, so that the type, which are assembled in the channel on their feet, are

not only turned to horizontal position but given a quarter turn horizontally, as will be clear from Fig. 2. An arm 30 is pivoted on the bracket 26 and under tension to move to the left by reason of spring 31. At the first movement of the starting lever the upper end of arm 30 advances and presses the type into the channel beyond a pair of spring pawls 32.

The starting clutch is operated by arm 26^b carried by the shaft 26^a, the arm 26^b engaging a lug 26^c carried by the shaft 656 which is thus rotated simultaneously with the movement of the type channel so as to actuate the cam arm 650 through the rocker arm 655 on shaft 656, and thus actuate the clutch to start the justifying mechanism, as in the patent above referred to. As the shaft 33 (Fig. 3) rotates, a cam 33^a permits the arm 34 to rise which, through link 35, raises a slide 36 having projections 37 which enter the type channel and carry up the line of type therein through an intermediate channel 38, which is stationary, into a movable justifying channel 39. As the line enters the channel 38 it encounters a pair of arms 40 carried by and having a transverse movement in a weighted slide 41. These arms are normally pressed to the right by a spring 42 and their position is controlled by a pin 43 traveling in a slot 44 formed in a guide block 44^a (Figs. 2 and 2^a). As the line rises, the weighted slide 41 is carried up and when it approaches the channel 39 the slot 44 permits the arms 40 to move to the right out of the type channel and be retained in this position by a spring switch 43^b. At this point the slide 41 engages a depending hook 45 (Fig. 3) and the slide remains suspended while the line passes into the justifying channel 39. When the line has passed into said channel a projection 45^a on the slide 36 rocks the hook 45 releasing the weight 41 which then drops to its normal position, shown in Fig. 2. As weight 41 drops, a depending leg 41^a carried by the weight 41 strikes an arm 46 (Figs. 2 and 3) on the shaft 21, rocking said shaft and throwing the preceder back to the lower or outer end of the assembling channel. In its downward movement pin 43 of the arms 40 comes down against the incline 43^a, displacing the spring switch 43^b and thrusting the arms 40 back into the line channel.

The justifying channel 39 is mounted on an inclined axis or shaft 47 (Figs. 1, 4 and 5) as in the machine of the patent, the channel being carried by an arm 48 swinging on said axis, said arm being rigidly fastened to a sleeve 48^b which also carries a collar having the short operating arm 48^a which is actuated to swing the justifying channel from its line receiving position to the justifying position, as shown and described in

the patent. The spring 49 normally holds the channel 39 pressed downward in close contact with the intermediate channel 38, said channel being raised slightly over an incline against the pressure of spring 49 while passing from one position to the other. In the channel 39 is a preceder 50 connected by link 51 on an arm 52 which is mounted on a pivot 53 on the hub of arm 48. The preceder is constantly pressed down by a coiled spring 53^a within a drum on the pivot 53, one end of said spring being connected to a notched plate 54 which is adjustable to vary the tension of the spring and is held in any desired adjustment by a spring pawl 55. While the channel 39 swings from its position over channel 38, as shown in Fig. 1, the spring feet or hooks 39^a, held outside of said channel by a fixed projection 39^b, are allowed to pass under the line, holding it in channel 39 until the discharging point is reached, where they strike a fixed projection 56^a which moves said feet from under the line leaving the latter free to move downward under the pressure of arm 52. When the channel 39 is in its right hand position, or over the justifying device, in the position shown in Fig. 4, the preceder 50 acts as a follower to move the line word by word down to the justifying devices 50^a. After the preceder 50 has moved the last word out of the channel 39 it becomes necessary to raise the preceder 50 slightly so that the channel may move back to its normal position over the channel 38. This is done by means of a rod 56 (Fig. 4) which rocks an elbow lever 57. The elbow lever throws a spring dog 58 under the arm 52 raising said arm and holding up the preceder 50 until the succeeding line from the channel 38 enters the channel 39 and raises the preceder before it. When this takes place the dog 58 is released and returns to its normal position, as shown in Fig. 4. The dog 58 is pivoted on the arm 48 which carries the channel 39. The mechanism for rocking the arm 48 and the justifying channel is the same as in the patent.

Another improvement relates to the computing devices which primarily determine the justifying spaces for the line. The general construction and arrangement of the computing devices is the same as in my patent above referred to and these need not be illustrated or described herein further than is necessary to explain the application of the present improvements. The general features of this computing mechanism, which are the same as in said patent and shown herein for illustration of my improvements, are as follows, the same reference numbers being used as in said patent for convenience, except in the case of the computing bar and gage carrying blade:—The computing devices are mostly contained within the casing

B and include the computing bar *a* pivoted to be set in accordance with the number of spaces, the gage carrying blade *b* moving in a straight line to be set in accordance with the shortage of the line by slide 119, the gage block 132 carrying the contact block 136 which is limited in its movement by the edge of the computing bar *a*, and the locating rod 250 by which the contact block is moved.

The devices of the patent illustrated herein include also the space value locating rod 434 carrying the ratchet bar 417, the difference trip 348 carried by rocker arm 350 and operated by arm 351 engaged by the tripping finger 355, and a dog 432 engaging the bottom teeth on bar 417 carried by rocker arm 433 and actuated by arm 435. The difference controller 302 and parts coacting therewith, including the wedge 311, the upper and lower wedge blocks 310, 312, and the wedge plate 301, are shown in Figs. 6 and 9. All the parts above referred to, as well as the other parts illustrated and not described hereafter, are the same in construction and operation as in the patent above referred to.

Referring now to the features that relate especially to the present invention and including the devices that have been added or modified in accordance therewith, in the casing B, in addition to the slide 119, there are two vertically movable slides 72, 73. The slide 73 is set for each line according to the number of word spaces in the line by the following means:—A space key 74 (Fig. 1) is operated between words in assembling the line. This introduces a temporary space or separator into the line of type in the assembling channel as usual in type setting machines and also rocks a shaft 75 having an arm 76 (Fig. 5) which is connected by a link 77 with the arm 78 of the lifting pawl 79 Fig. 8. Pawl 79 normally stands in its lowermost position and clear of the teeth of the slide 73, which is the rear slide in the case. The arm 78 extends through an opening in the casing. The slide 73 is sustained when raised by a spring holding pawl 80. Slide 73 carries a cross-piece 81 on which is pivoted a pawl 82 arranged to cooperate with teeth on the slide 72. The lower end of pawl 82 is connected by a link 83 with a lever 84 having a cooperating pawl 84^a and a pin 84^b on its rear side engaging with a slot 86 in a sliding plate 87. By moving plate 87 the pawls 82 and 84^a are moved into and out of engagement with the slide 72. After the counting slide 73 is raised to represent the number of spaces in a given line by the key-lever 74 and its connection the pawl 82 is thrown into engagement with the slide 72, which has been previously raised to a given height by the pawl 91 mounted on one arm of a bell-crank lever 72^a carried by short shaft 90, and the holding pawl 80 is then thrown out from slide 73 by the engage-

ment of its pin 85 with the right end of the slide 87. The two slides 72, 73 then drop until they are stopped by a pin or shoulder 88 on slide 73 coming in contact with a fixed abutment. In this way the slide 72 is positioned according to the number of spaces in the line. Immediately on assuming such position slide 72 is clamped or locked by pawl 89 by means of arm 89^a, rod 96, spring pressed latch 97 and cam plate 93 which is actuated from the main driving shaft through the lever 89^b pivoted at 89^c (see Fig. 5), and the slide 73 is simultaneously released from engagement with slide 72 by means of the cam plate 93 and latch 99 and is free to be set for the succeeding line. This release of slide 73 is secured by the upper cam shoulder on plate 93 striking the end of latch 99, so as to rock the latch on its pivot, the short arm of the latch 99 then moving the slide 87 to the right in Figs. 5 and 8 through engagement with the spring 100, and thus through pin 84^b in slot 86 on slide 87 rocks the catch 84^a directly and the catch 82 through link 83, so as to throw both the catches 84^a and 82 out of engagement with slide 72, so that the slide 73 may be moved independently of the slide 72. The setting for the justification of the line is taken from the slides 119, 72, (this slide 72 corresponding to slide 117 in Patent No. 844,564) as described in said patent, and the line thereupon justified. During the justification of the line the shaft 90 is rocked once for each word space and by means of the moving pawl 91 and the holding pawl 92 the slide 72 is restored to its initial elevated position. It will be observed that the slide 72 is dropped as many units or teeth as there are word spaces in the line and again raised the same amount as the line is justified. At the end of the justification of each line the slide 72 is, therefore, always at the same height and ready to be set for the succeeding line. The pawls 91, 92 are thrown out of engagement with slide 72 substantially as in said patent.

In the patent above referred to, a number of movements of the computing device of the justifier were effected by means of a four-motion cam. In the present instance, I accomplish the same purpose by means of the cam 93 before referred to having a straight up and down motion. Some of the movements effected by this cam are as follows:—The slide 94 (Fig. 8) which operates to release the pawl 80 is operated by a beveled tooth 95 carried by a spring plate 95^a attached to the cam slide. The tooth 95 is so beveled that it will spring back and not affect the slide 94 during the return movement of the cam plate 93. The locking slide or rod 96 is also operated by a cam plate. This rod operates upon the arm 89^a of the pawl 89 and latch 97 which is normally held in the

position shown in Fig. 8 by a spring 98, being held against a stop pin 98^a on the slide. This lever 97 is the part which comes in contact with the cam plate 93 and it permits the cam to operate the slide 96 in one direction only, the spring 98 yielding in the opposite direction. A similar elbow lever 99 is mounted on the slide 87 for the same purpose and controlled by a spring 100. With the exception of moving the slides 87, 94 and 96 the cam plate performs exactly the same operation as in the machine of said patent. After each line is assembled the cam plate is moved first downward and then upward by means of the arm 89^b operated by a cam suitably mounted in the machine. During its downward movement the bar 75 is engaged with the bar 72 and both are dropped, as before described. This is effected by the movement of the slide 87. The slide 96 is also operated during the downward movement to lock the slide 72.

Referring to Fig. 5, 101 indicates the friction block or preceder in the word cut-off channel 102. This block has a wing 103 provided with an inclined slot which is engaged by a pin on an arm 104. The arm 104 is carried by a disk mounted on a pin 105 which is mounted on the slide 106, which is the same in construction and operation as slide 523 of the patent. On each side of the disk of arm 104 is a leather washer to produce the requisite friction and the parts are pressed together by an upper disk 107 and spring 108. A third disk 109, beneath the lower leather disk, is provided with a pin or projection 110 which engages a spring hook 111 as the slide 106 moves to the left, throwing the friction slide or preceder 101 down to a position below the line. If slide 101 is pushed too low it will be raised by the incline 112, as the slide 106 moves to the left, so as to assure the slide 101 being above the galley wall. On its further movement it will drop in the notch 113, so as to be below the type that are being pushed into the galley, and on its return movement it will move up the incline 114 so as to pass this. The operation of these devices is the same as in the patent, except as to the parts 101 to 114 inclusive.

Having described the invention what is claimed is:—

1. In a typographic machine, a type channel having two positions, a position in which the channel extends lengthwise in a substantially horizontal direction and a position in which the channel extends lengthwise in a substantially vertical direction, and mounted to move on an axis inclined to the direction in which the channel extends between these positions, whereby the channel is turned on its longitudinal axis as the inclined axis is rotated.

2. In a typographic machine, a movable

type channel having a shaft or axis arranged at an angle to the horizontal and inclined to the direction in which the channel extends, whereby said channel may be shifted from a position in which the channel extends lengthwise in a substantially horizontal direction to a position in which the channel extends lengthwise in a substantially vertical position and be simultaneously turned on its longitudinal axis.

3. In a typographic machine, the combination of a type channel, of a preceder movable in said channel, a recess in the side of said channel to receive the preceder, and means other than the type for moving the preceder into said recess to permit a line of type to pass it.

4. In a typographic machine, the combination of a type channel, a preceder movable within said channel, means for impelling the preceder in one direction to resist the entrance of a line of type and means other than the type for impelling the preceder in the opposite direction after a line of type has partially entered the channel.

5. In a typographic machine, the combination of a type channel, a preceder movable longitudinally in said channel, means other than the type for automatically moving the preceder into a recess as the line advances to permit the line to pass, and means for automatically restoring the preceder to the channel entrance after the line has passed.

6. In a typographic machine, the combination of a movable type assembling channel, a starting lever, and means for shifting the channel simultaneously with the operation of the starting lever.

7. In a typographic machine the combination of a type channel, and a device in said channel adapted to act as a preceder in receiving a line and as a follower to eject the line, means for moving said type channel laterally, and means for moving said device into the empty channel to permit said movement.

8. In a typographic machine, the combination with a shifting type channel for transporting a line from one position to another, of a device in said channel constructed to act as a preceder as the line enters the channel and as a follower to eject the line after it has been shifted, and means for moving said type channel.

9. In a typographic machine, the combination with a type channel, of a weighted slide movable parallel to said channel, a laterally movable preceder carried by said slide, and means for moving the preceder into and out of the type channel.

10. In a typographic machine, the combination with a vertically arranged type channel, of a weighted slide movable parallel with said channel, a laterally movable pre-

ceder mounted on said slide and a switching cam groove for controlling said preceder.

11. In a typographic machine, the justifying device comprising a part movable in proportion to the number of word spaces in the line, a second part movable in one direction with the first named part and in the other direction having an independent movement.

12. In a typographic machine, a justifying device comprising a vertically arranged slide, means for moving said slide step by step in proportion to the number of word spaces in the line, a second vertically arranged slide, and means for raising it to a given height after each line, and means for temporarily connecting said slides and dropping them while so connected, whereby the second slide is adjusted according to the setting of the first.

13. In a typographic machine, a justifying device comprising a slide movable in accordance to the number of word spaces in the line, a second slide, means for coupling the first slide to the second one, means for then adjusting the slides according to the number of word spaces, and means for then releasing the first named slide and simultaneously clamping the second one.

14. In a typographic machine, the combination with a space key, of a slide and means for moving the same from the space key, a second slide, and means for moving the same from said first named slide, and means for clamping the second slide to cause it to

retain a position corresponding to the number of word spaces in the line.

15. In a typographic machine, the combination with the computing device of a cam plate having a straight line motion and adapted to effect the locking and releasing of the said computing device.

16. In a typographic machine, the combination with the word cut-off channel, of a preceder and a friction device for controlling said preceder comprising an arm connected with the preceder, a disk upon which said arm is carried, and means for holding said disk frictionally.

17. In a typographic machine, the combination with the word cut-off channel, of a preceder slide in said channel, and an arm having a pin-and-slot connection with said slide, a slide upon which said channel and arm are carried, and means for rocking the arm as the slide is moved.

18. In a typographic machine, the combination with a slide, a word cut-off channel carried by said slide, a preceder in said channel, and an arm carried by the slide and connected with the preceder, of a spring hook arranged to engage said arm and rock it as the slide is moved toward the galley.

In testimony whereof I affix my signature, in presence of two witnesses.

BENJAMIN M. DES JARDINS.

Witnesses:

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