

(No Model.)

5 Sheets—Sheet 1.

F. A. JOHNSON.

MACHINE FOR MAKING CONTROLLERS FOR COMPOSING MACHINES.

No. 584,366.

Patented June 15, 1897.

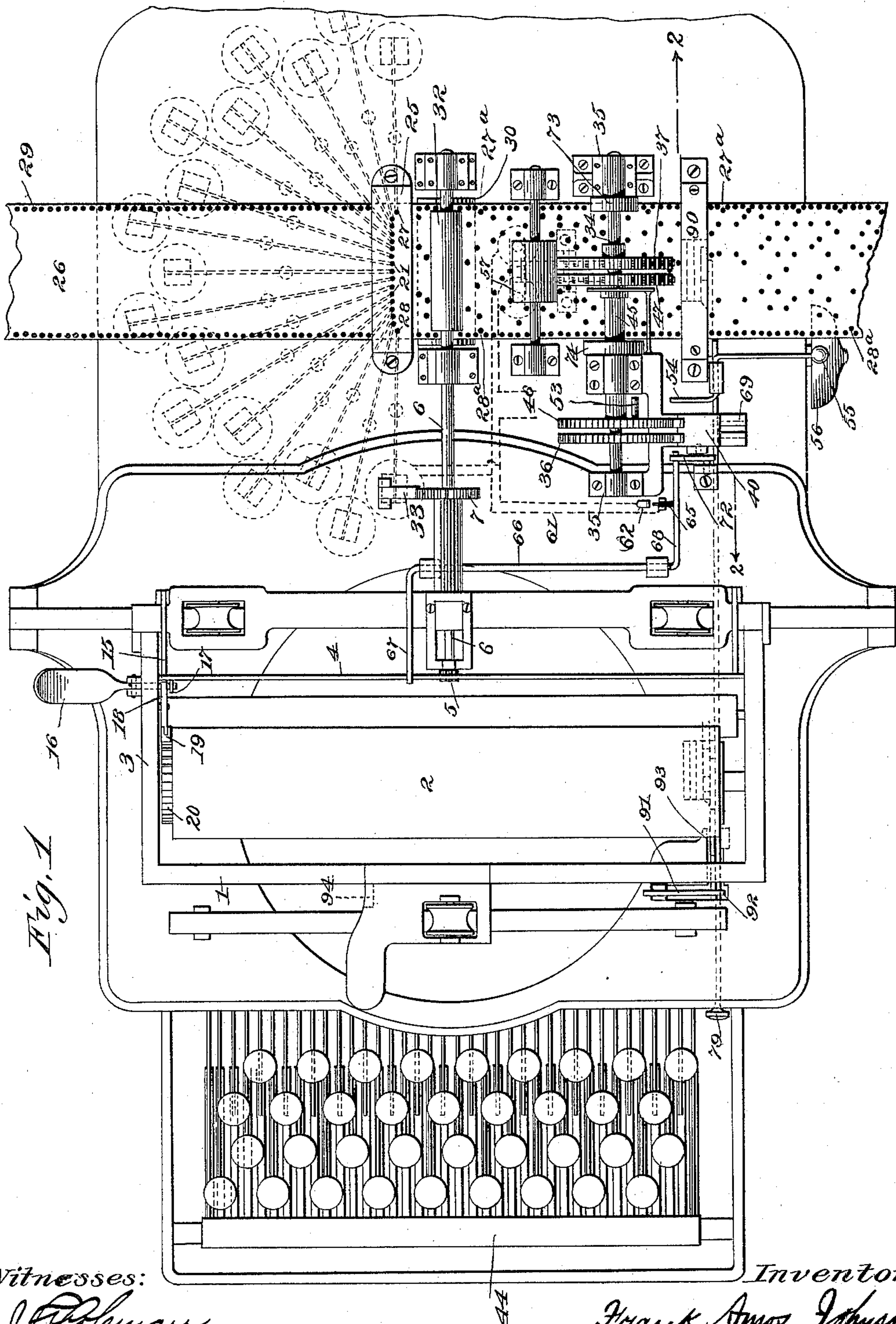


Fig. 1

Witnesses:

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Robert Watson

Inventor

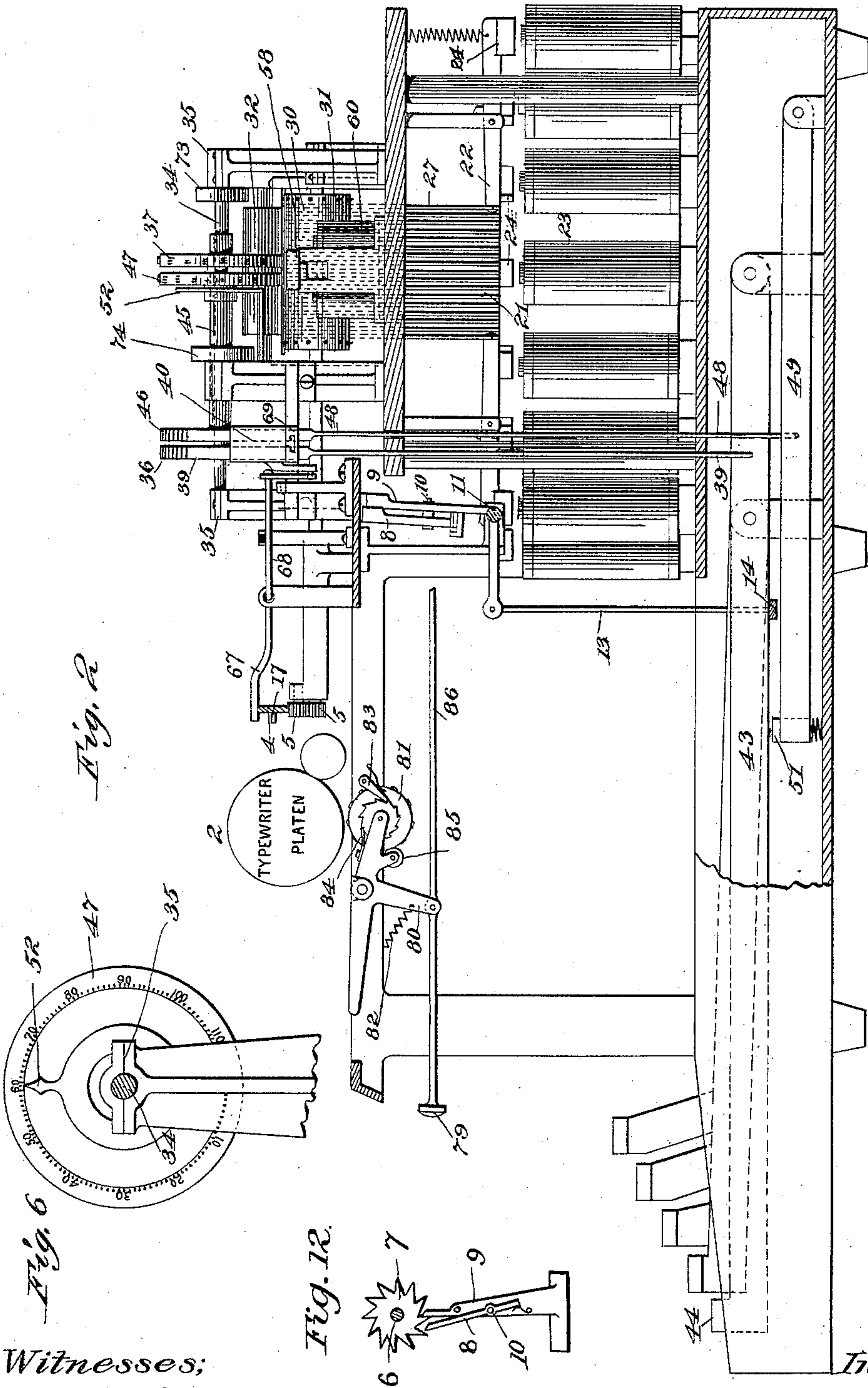
Frank Amor Johnson
By J. Watson Atty.

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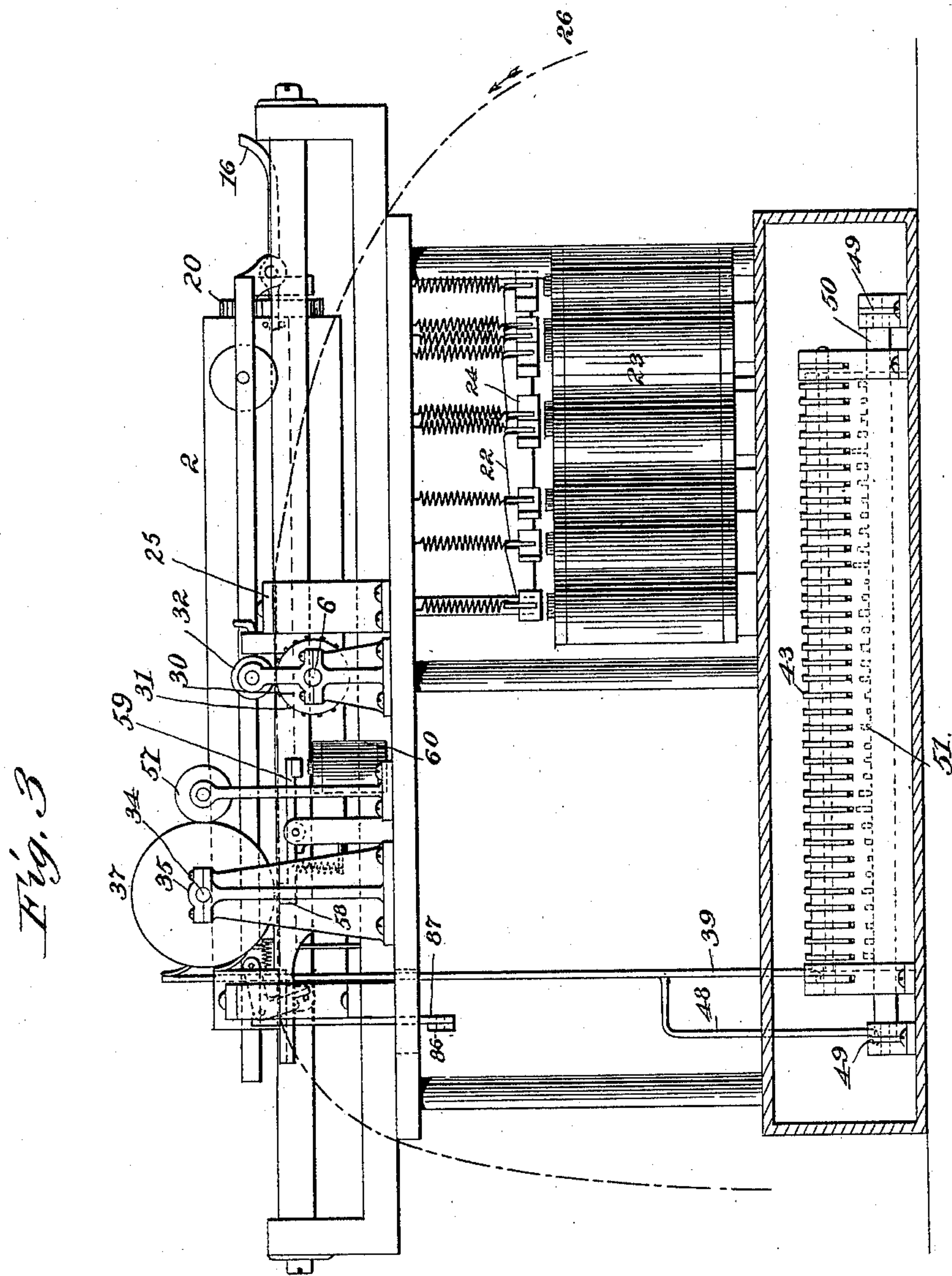
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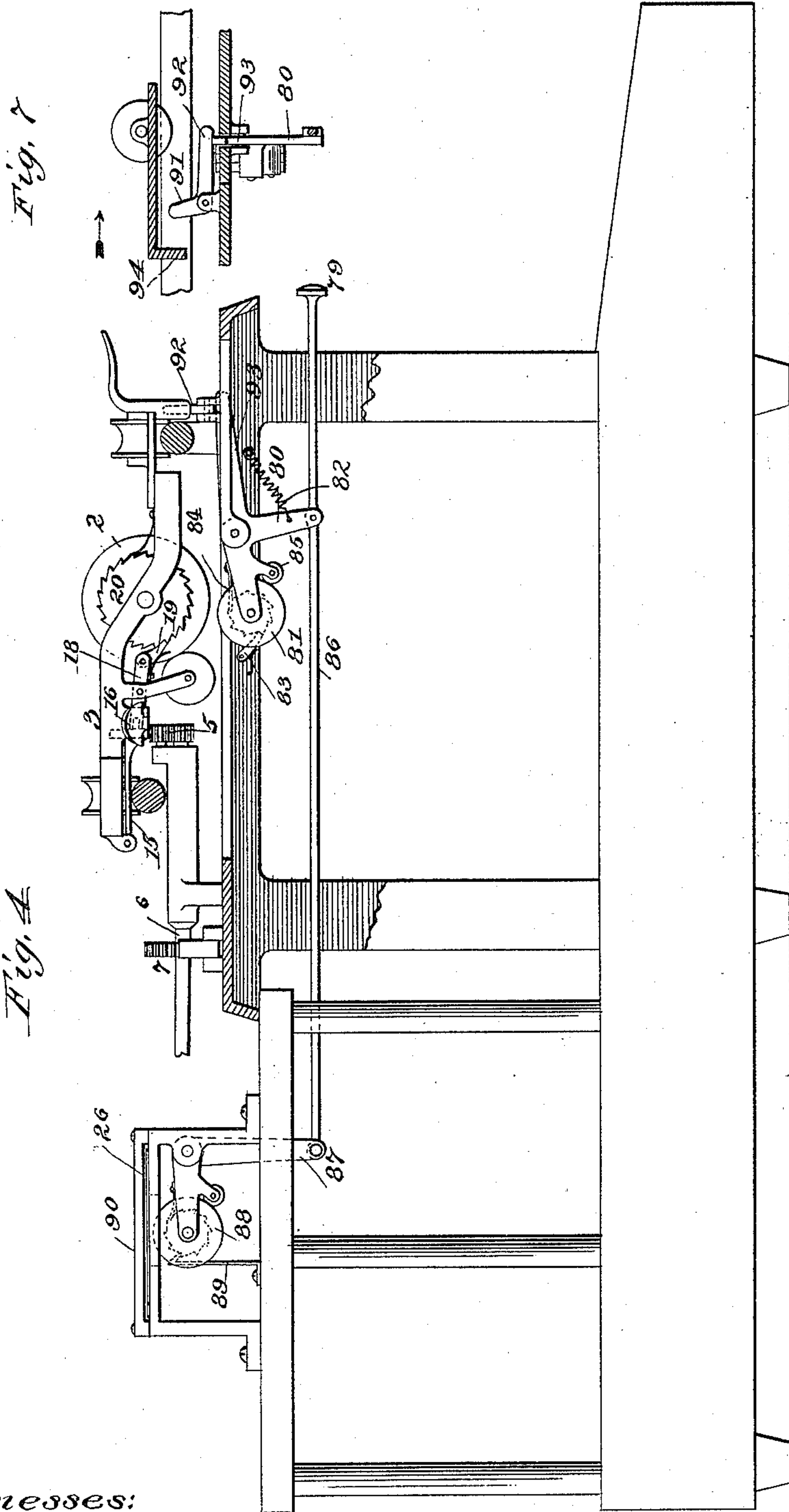
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MACHINE FOR MAKING CONTROLLERS FOR COMPOSING MACHINES.

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Witnesses:

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(No Model.)

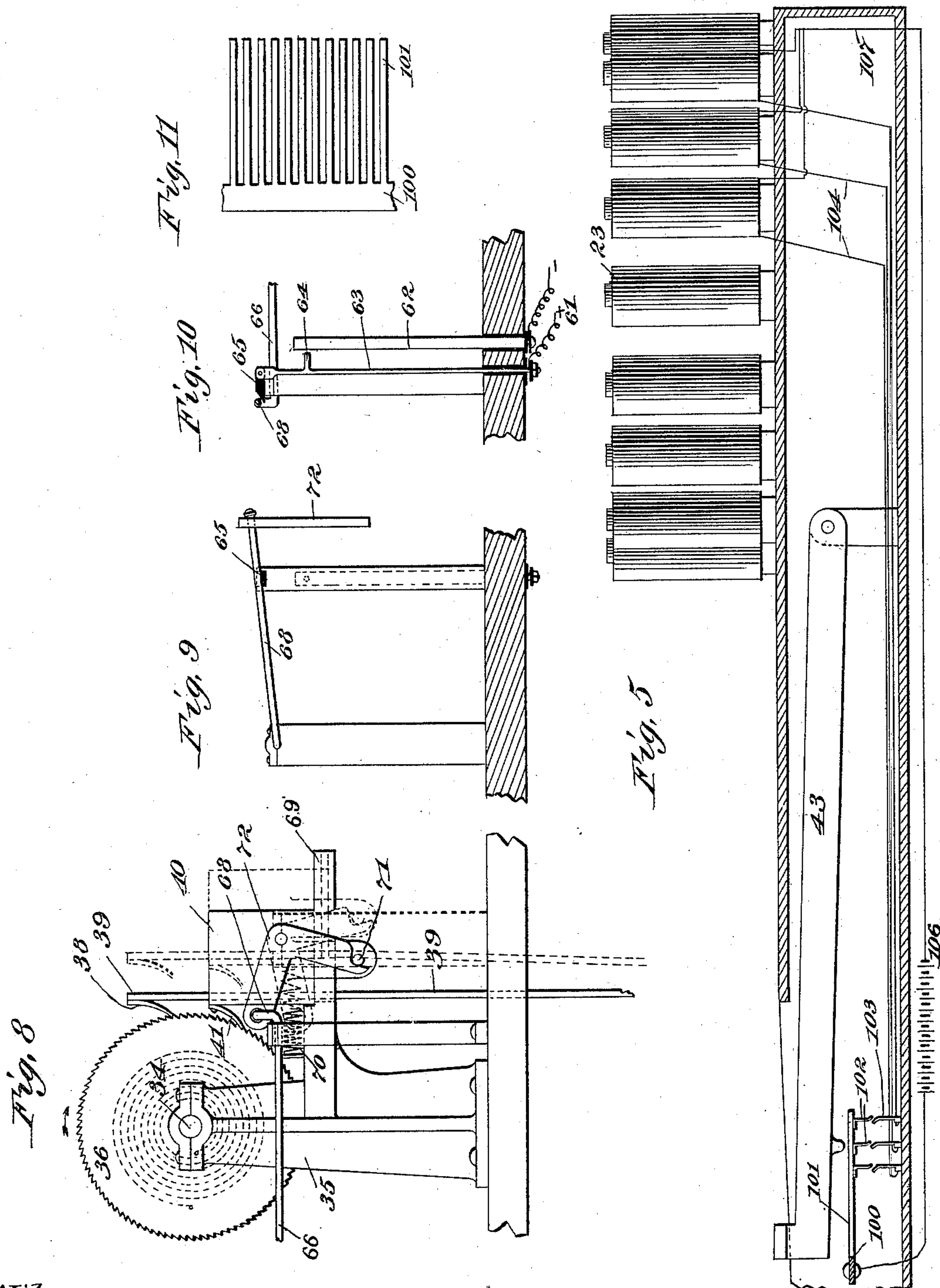
5 Sheets—Sheet 5.

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Atz. 4

UNITED STATES PATENT OFFICE.

FRANK AMOS JOHNSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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MACHINE FOR MAKING CONTROLLERS FOR COMPOSING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 584,366, dated June 15, 1897.

Application filed November 15, 1894. Renewed May 17, 1897. Serial No. 637,004. (No model.)

To all whom it may concern:

Be it known that I, FRANK AMOS JOHNSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Controllers for Composing-Machines, of which the following is a specification.

My invention consists in an improved machine by means of which a strip of paper or equivalent material is impressed or perforated to form a controller, while upon another strip or sheet of paper a proof or copy of the subject-matter represented on the controller is written out and divided into lines corresponding with the lines to be ultimately produced by the composing-machine. In order to identify the controller-strip with the typewritten copy, I provide mechanism for periodically and simultaneously marking the copy and the corresponding impressions upon the strip with corresponding identifying marks or numbers.

In the present machine there is no justifying mechanism, it being designed to produce the justifying-impressions upon the strip by a subsequent operation. To facilitate the proper justification of the strip, I provide in the present machine letter-space and word-space registering mechanism, by means of which the number of word-spaces and the total letter-space in each line is registered upon the controller-strip in or adjacent to the corresponding line group of impressions. The product of the machine is therefore, first, a controller-strip having impressions adapted to select characters in the composing-machine and other impressions for the character-spaces, if required, and having imprinted thereon at intervals identifying numbers or marks and at each group of perforations representing a line the number of word-spaces in the line and the total amount of character-space, or, what is equivalent, the difference between the desired length of line or width of column and the total amount of space occupied in a line by the characters. The second product is a sheet or strip having the subject-matter to be composed type-written

thereon and divided into lines corresponding with the line groups on the controller-strip and having at intervals corresponding identifying-marks. One object in making a typewritten copy is to provide a proof by means of which any errors in composition may be corrected, the corrections being made by canceling or inserting impressions in the controller-strip. Another object is to provide a convenient record of, and means of identifying, the strip. By the use of this proof-copy any particular controller or any desired line or part of a controller may be quickly identified and selected.

I shall now proceed to describe in detail one embodiment of my invention, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a machine, illustrating the invention. Fig. 2 is a right-side elevation, partly in section, on the line 2 2 of Fig. 1. Fig. 3 is a rear elevation, partly in section. Fig. 4 is a left-side elevation, partly in section and having portions of the mechanism removed. Fig. 5 is a section through the base of the machine, showing the electrical connections. Figs. 6 to 11, inclusive, are fragmentary details; and Fig. 12 is a front view of the type-writer escapement.

For convenience I have adopted for the typewriter portion of the machine a Remington Standard type-writer, the chief features of which are so well known that a detailed illustration and description of them may be omitted from the present application. Such modifications of this machine as I have made to adapt it to the purposes of the present invention will, however, be fully described.

Upon the framework is a carriage 1, in which is supported the usual platen 2. The carriage is moved for letter-spacing by means of a rack 4, pinions 5, shaft 6, ratchet-wheels 7, and escape-pawls 8 and 9, engaging the ratchet-wheel. The pawl 8 is pivoted at 10 to the pawl 9, and the latter is pivoted to the main frame at 11 and provided with an arm, which is connected by a rod 13 to a universal bar 14, underlying the key-levers and space-lever. The operation of the pawls 8 and 9 is the same as that of the usual pawls upon the

Remington type-writer, fully described, for instance, in United States Patent No. 471,710. The rack 4 is supported upon pivoted arms 15, and when it is desired to return the carriage to begin a new line the rack is raised from its pinion by means of a thumb-lever 16, the inner end of which engages a pin 17 upon the rack, Figs. 1 and 2. The inner end of the lever 16 engages the forked rear end of a lever 18, which is pivoted to the carriage-frame. The forward end of this lever carries a pawl 19, which engages the ratchet-wheel 20 to rotate the platen. It will thus be seen that by depressing the thumb-lever 16 the carriage may be released and moved to begin a new line and the platen rotated to bring the new line to the printing-point.

The perforating or impression mechanism, as shown, consists of a series of punches 21, Figs. 1 and 2, connected to the inner ends of levers 22 and operated by magnets 23, which cooperate with armatures 24 upon the outer ends of the levers. The upper ends of the punches lie normally beneath the die-plate 25, and the controller-strip 26 passes through between the punches and the die-plate.

To simplify the drawings and description, I have illustrated a machine capable of making but thirty-six characters. Each character is represented upon the strip by two perforations, and the space occupied by the character is represented by a third perforation. In addition to the punches for these perforations there is a special punch 27, which produces perforations 27^a, indicating the blanks left for word-spaces, and a special punch 28, which makes perforations 28^a to indicate the division of the matter into lines. The strip is preferably provided with feed-holes 29 in its margins, and it is drawn through over the punches step by step by means of a feed-roller 30 upon the shaft 6, the feed-roller being provided with pins 31, which engage the marginal perforations 29. A smaller roller 32 prevents the strip from slipping off of the pins. To prevent any backward movement of the feed-roller, a holding-pawl 33 is arranged to ride upon the ratchet-wheel 7.

I shall now describe the mechanism for registering the character-space and the number of word-spaces upon the strip.

Referring particularly to Figs. 1, 2, 3, and 8, 34 indicates a shaft mounted in bearings 35 and having fixed thereon a ratchet-wheel 36 and a type-wheel 37 for printing the number of word-spaces upon the strip. The ratchet-wheel 36 is operated by a pawl 38 upon the rod 39, which passes up through a sliding block 40. There is also a holding-pawl 41, which is connected directly to the slide 40. The lower end of the rod 39 is connected to the lever 43 of the word-space key 44. Upon the shaft 34 is a sleeve 45, carrying a ratchet-wheel 46, adjacent to the ratchet-wheel 36, and a type-wheel 47, adjacent to the type-wheel 37. The type-wheel 47 is provided with numbers for printing upon the

strip the amount of character-space in a line expressed in units. The ratchet-wheel 46 is moved by means of pawls similar to those for moving the wheel 36, the moving pawls being connected with a rod 48, the lower end of which is connected with a lever 49. The lever 49 is connected at its forward end with a universal bar 50, which underlies the type-levers, Figs. 2 and 3. Upon the upper side of the bar 50 are projections 51 of varying heights, one under each key-lever. These projections are so proportioned that when a key-lever is depressed the bar 50 will be moved down a distance corresponding with the space which the character upon the key requires. The bar 50 also underlies the space-lever 43, and the wheel 47 registers in this instance the total of character-space plus the normal word-spaces. Upon the front side of the type-wheel 47 is a scale, and an index or pointer 52 indicates to the operator the amount of matter in a line at any time, Fig. 6. As the line becomes nearly full a pin 53 engages a lever 54, and as the pin leaves the lever the hammer 55 rings a bell 56. The operator then arranges to finish the line at a proper point.

The type-wheels 37 and 47 are inked by a roller 57, and at the end of each line the numbers at the bottoms of the wheels are printed upon the strip by a hammer 58, Fig. 3, upon an armature-lever 59. The magnets 60, which operate this lever, are in a circuit 61, which is momentarily closed at the end of each line. As shown in Figs. 1, 9, and 10, the circuit 61 includes a circuit-closer, consisting of a post 62 and a spring-post 63, carrying a contact-piece 64. At the upper end of the post 63 is a pivoted block 65, having its outer end beveled. The block is so attached to the post 63 that it may be moved upward freely, but is not permitted to pass below a horizontal position. A rock-shaft 66 has an arm 67, which rests normally upon the rack 4 of the type-writer, and a second arm 68, which assumes a position just above the pivoted block 65, as shown in Figs. 9 and 10, when the rack 4 is in engagement with its pinion. When the rack is raised at the completion of a line, the shaft 66 is rocked, and during the first part of this movement the arm 68, acting upon the beveled end of the block 65, closes the contact 64 momentarily and the hammer 58 imprints upon the strip the figures which are lowermost upon the type-wheels.

The slide 40, which carries the pawls, is movable in guides 69. It is normally drawn toward the ratchet-wheels 36 46 by a spring 70, and is moved away from said wheels at the end of each line to withdraw the pawls and permit the ratchet-wheels to return to their initial positions, with the zeros of the type-wheels opposite the print point. As shown in Fig. 8, a pin 71 upon a depending arm of the slide 40 is engaged by one arm of an elbow-lever 72. The other arm of this lever is in engagement with the arm 68 of the rock-shaft

66. When the shaft 66 is rocked, as above described, it first closes the contact 64 and prints upon the strip the numbers corresponding to the line just finished, and then upon further movement throws the slide 40 backward, disengaging all of the pawls from the ratchet-wheels 36 37. Upon the ratchet-wheels being released coiled springs 73 and 74 return the type-wheels 37 and 47, respectively, to their initial positions. After moving the type-writer platen to the right to begin a new line the rack 4 is again lowered and the pawls are drawn into engagement with the ratchet-wheels 36 46 by the spring 70. The electric circuit 61, above mentioned, also includes the operating-magnet of the line-indicating punch 28, and while the numbers are being imprinted upon the strip a line-indicating hole 28^a is punched.

Pivoted to the main frame beneath the platen 2 is a T-shaped lever 80, upon one arm of which is carried a numbering head or device 81, Figs. 1, 2, 4, and 7. The numbering-head is normally drawn away from the platen by means of a spring 82, and it is designed to be periodically thrown up against the platen to print the uppermost number upon the proof-sheet. Each time the head is thrown up it is fed forward to present a new number to the printing-point by a pawl 83. A holding-pawl 84, carried by the lever, prevents rearward movement of the head, and the types are inked by a roller 85, also carried by the lever. The depending arm of the lever 80 is connected by a rod 86 with the depending arm of an elbow-lever 87, which carries a duplicate numbering head or device 88 beneath the perforated portion of the controller-strip 26. This numbering-head is provided with a moving pawl 89, and the lever carries a holding-pawl and an ink-roller similar to those carried by the lever 80. A fixed bar or platen 90, Fig. 4, serves as a support for the strip while the numbers upon the head 88 are being printed upon it. I have shown the rod 86 as prolonged to the front of the machine and provided with a push-button or key 79. During the manufacture of the strip the key 79 may be operated at intervals and the corresponding numbers upon the numbering-heads printed, respectively, upon the proof and the strip. These numbers or marks will serve to identify the strip with the proof-sheet and enable the operator to quickly select any part of the strip for correction or other purposes.

I consider it preferable to number or mark every line of the proof and the corresponding line groups of the perforations upon the controller, and for this purpose I provide automatic mechanism for operating the numbering-heads. As shown in Figs. 1, 2, 4, and 7, an elbow-lever 92 is pivoted to the main frame, with its horizontal arm resting upon an arm 93 of the lever 80. The vertical arm 91 of the lever 92 lies in the path of a shoulder or projection 94 upon the front rail of the type-

writer carriage 1. As the carriage approaches its right-hand position to begin a new line the projection 94 engages the lever 92, and this in turn rocks the levers 80 and 87 and throws the numbering-heads up against their respective platens. The lever 92 operates as a stop before the type-writer carriage, and the number upon the head 81 is printed upon the proof-sheet at the moment the carriage comes to rest. The numbers, it will be evident, will be printed at the middle of the proof-sheet, and I therefore locate the numbering-head 21 slightly in the rear of the center of the platen 2, so that the numbers will be printed between the lines and will not interfere with them.

The details of the numbering-heads 81 and 88 are omitted for convenience and because they form no part of the present invention. These numbering-heads may be of any of the usual mechanisms which are employed in hand-stamps and other similar machinery for consecutive numbering. The ratchet wheels and pawls shown will operate the unit-wheel of the numbering-head, and the remaining wheels will be operated therefrom in the usual manner.

In Figs. 1, 5, and 11 I have illustrated one way in which the punch-magnets may be energized. Beneath the forward ends of the key-levers is a metal comb 100, having spring-teeth 101, each of which is provided with three contacts 102. Beneath the contacts 102 are three coöperating contacts 103, which are connected by wires 104 to three of the magnets. A main wire 105 leads from the source of energy 106 to the comb, and when a key is depressed the contacts under it conduct the current to two magnets, which operate punches to produce character-selecting impressions, and to a third magnet, which operates a punch to produce a space-selecting impression corresponding with the character. There is a common return-wire 107 from the magnets to the source of energy. The space-key operates but a single magnet, which punches a space-indicating hole 27^a. The punches 27 and 28, as shown, are arranged to make perforations between the transverse lines of perforations made by the other punches.

It will be evident that the broader features of my invention may be embodied in a variety of different mechanisms. The type-writer may be of any desirable form and the connections may be mechanical instead of electrical. My improved methods of manufacture might be carried out by observing upon suitable dials the data for justification and the numbers of the lines and marking said data by hand, in pencil or otherwise, upon the controller-strip and the proof-sheet. The justification of the controller may also be accomplished by inserting with a hand-punch the necessary perforations for selecting justifying-spaces. It is preferable, however, both for convenience and accuracy, that the data

should be mechanically printed on the proof-sheet and the strip and that the justification should be afterward mechanically effected.

Without limiting myself to the precise construction and arrangements of parts illustrated and described, I claim—

1. The combination with a type-writer arranged to print a proof and mechanism for producing character-selecting impressions upon a controller-strip, of means for imprinting corresponding identifying-marks upon the proof and the strip, substantially as described.

2. The combination with a type-writer arranged to print a proof and mechanism for producing corresponding character-selecting impressions upon a strip, of two numbering devices and means whereby the characters of the numbering devices are impressed upon the strip and proof-sheet periodically to produce identifying-marks, substantially as described.

3. The combination with a type-writer arranged to print lines of characters upon a proof-sheet, mechanism for producing character-selecting impressions upon a controller-strip, character-keys and connections to said type-writer and impression mechanism, numbering devices arranged to print identifying-marks respectively upon the proof-sheet and strip, and means for automatically operating the numbering devices, substantially as described.

4. The combination with mechanism for producing character-selecting impressions in line groups upon a controller-strip, of devices for printing upon the strip the total character-space in the respective lines of characters, substantially as described.

5. The combination with mechanism for producing character-selecting impressions in line groups upon a controller-strip, of devices

for printing upon the strip the total character-space and the number of word-spaces in the respective lines of characters, substantially as described.

6. The combination with a type-writer for printing a proof in lines, and an indicating mechanism arranged to show the aggregate space in a line occupied by the characters, or characters and normal spaces, of impression devices connected with the type-writer and adapted to produce character-selecting impressions in line groups upon a controller, and means for marking the line groups of impressions for identification, substantially as described.

7. The combination with a type-writer having a uniform carriage-feed, of a perforating device, and means, having connections with the type-writer carriage, for feeding a controller-strip to the perforating device, substantially as described.

8. The combination with a type-writer provided with character-keys, of a carriage for the type-writer, a registering device adapted to register the appropriate widths of the characters, an impression device adapted to produce character-selecting impressions upon a controller-strip, a feed-roll for said strip, connections of the character-keys for imparting uniform movement to the type-writer carriage and the feed-roll, and other connections of said keys for imparting the desired variable-feed movement to the registering device, substantially as described.

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

FRANK AMOS JOHNSON.

Witnesses:

M. A. JONES,

FRANK H. MASSEY.