

No. 631,144.

Patented Aug. 15, 1899.

G. S. ANDERSON.
TYPE WRITER.

(Application filed Sept. 22, 1898.)

(No Model.)

5 Sheets—Sheet 1.

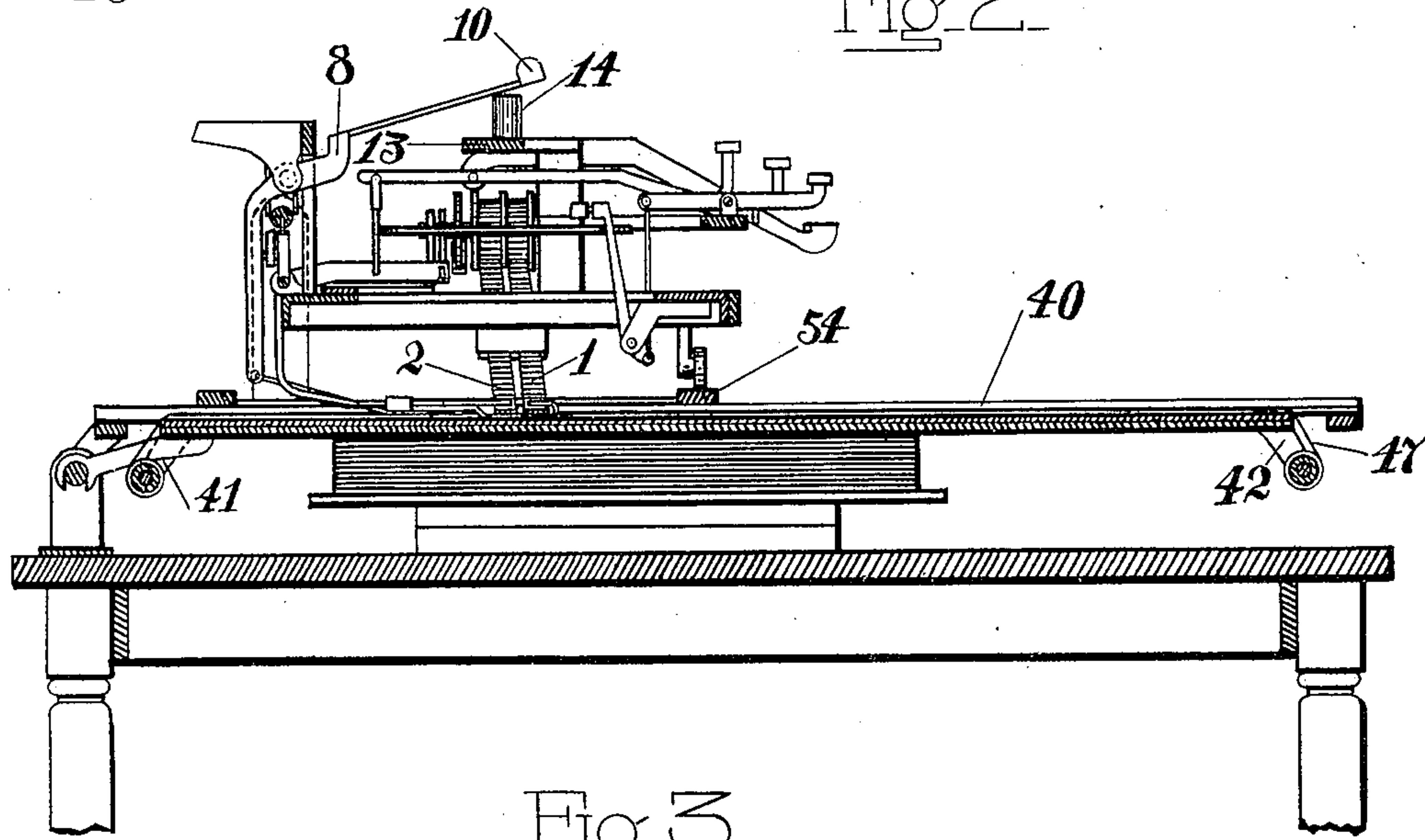
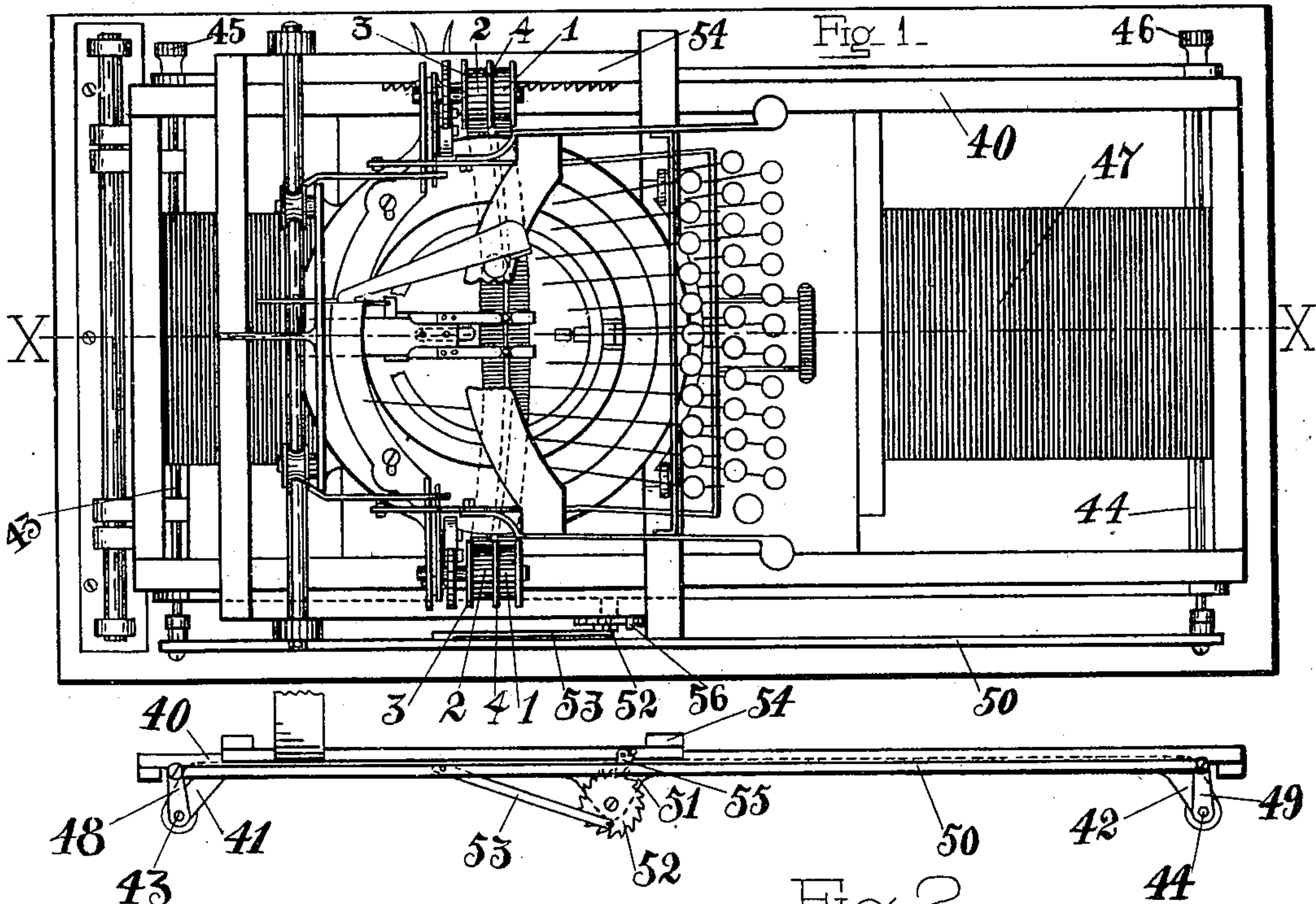


Fig. 3.

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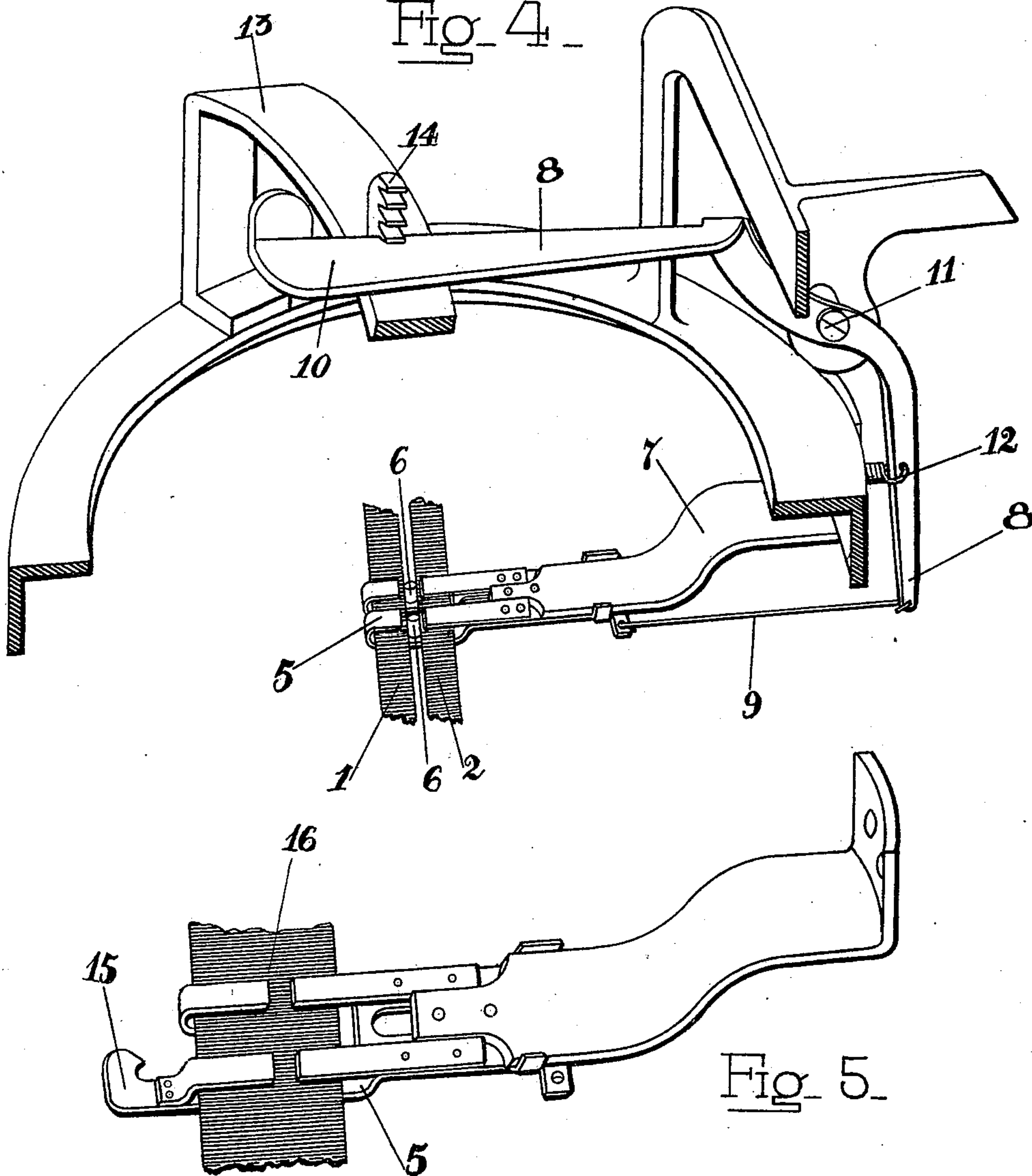
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Fig 4.



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Fig. 6.

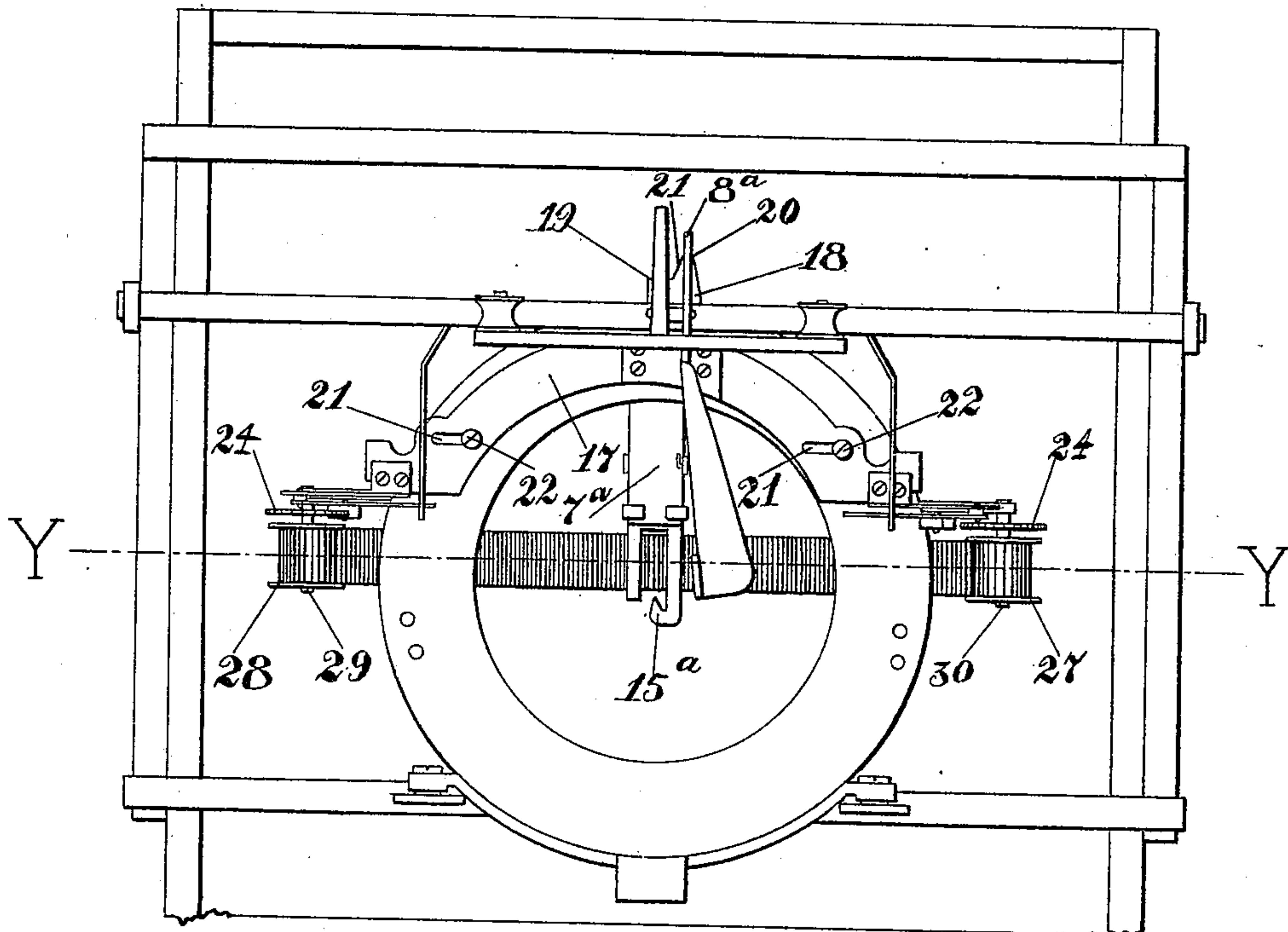
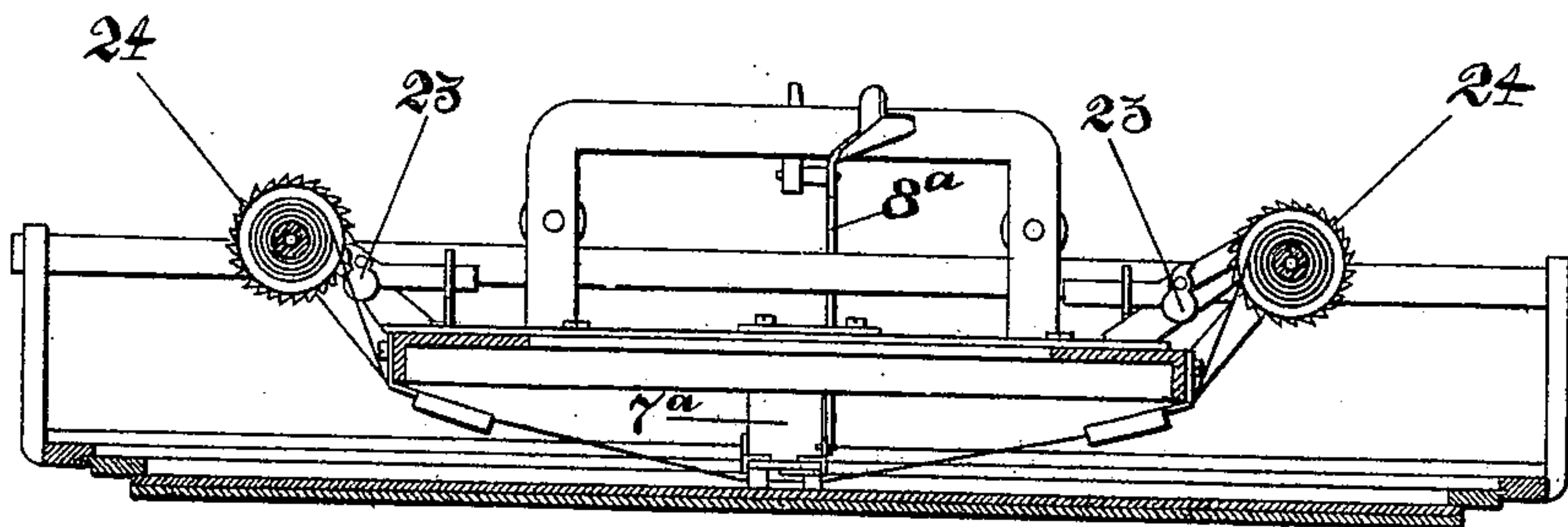


Fig. 7.



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Fig 8.

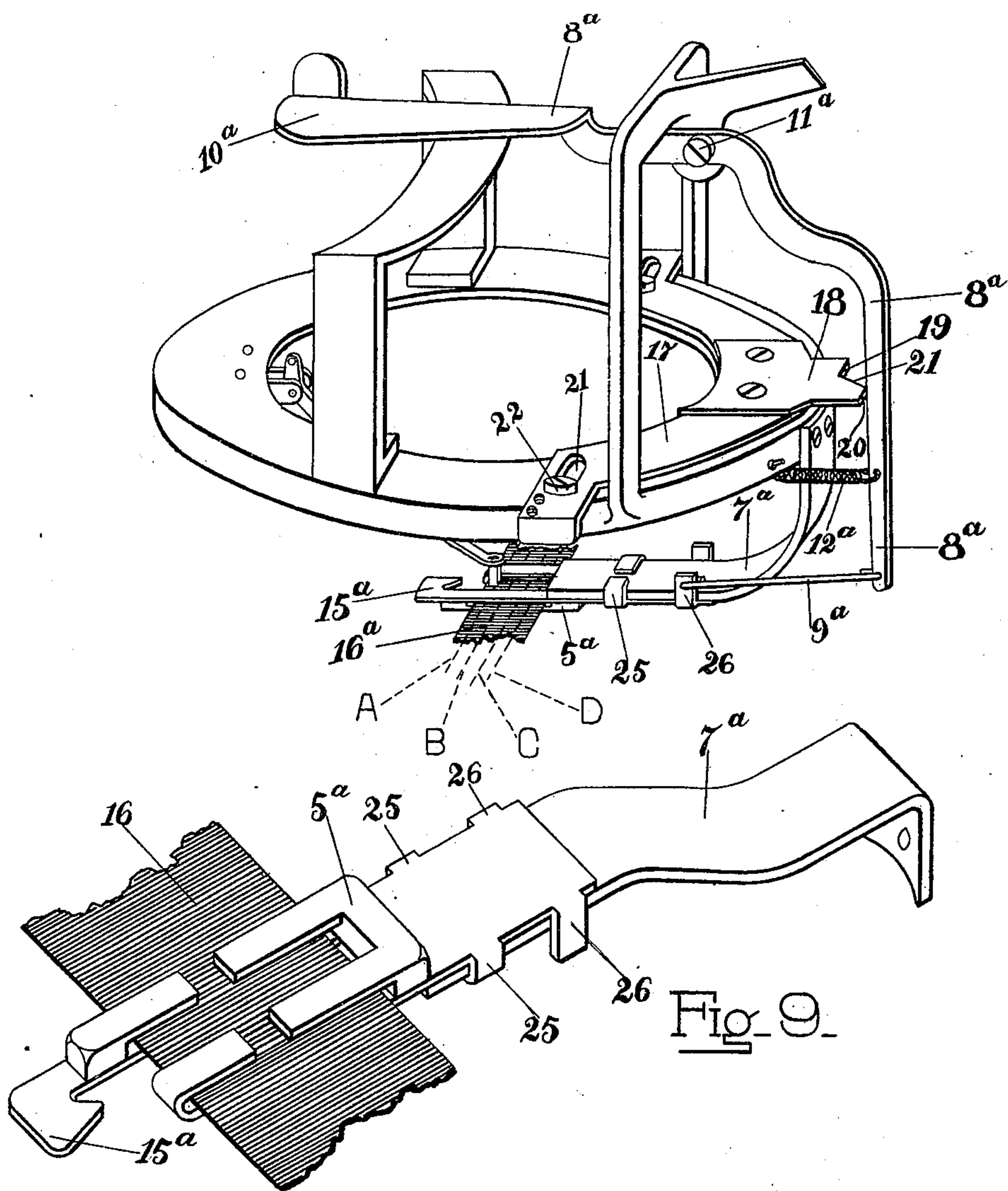


Fig 9.

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Fig 10.

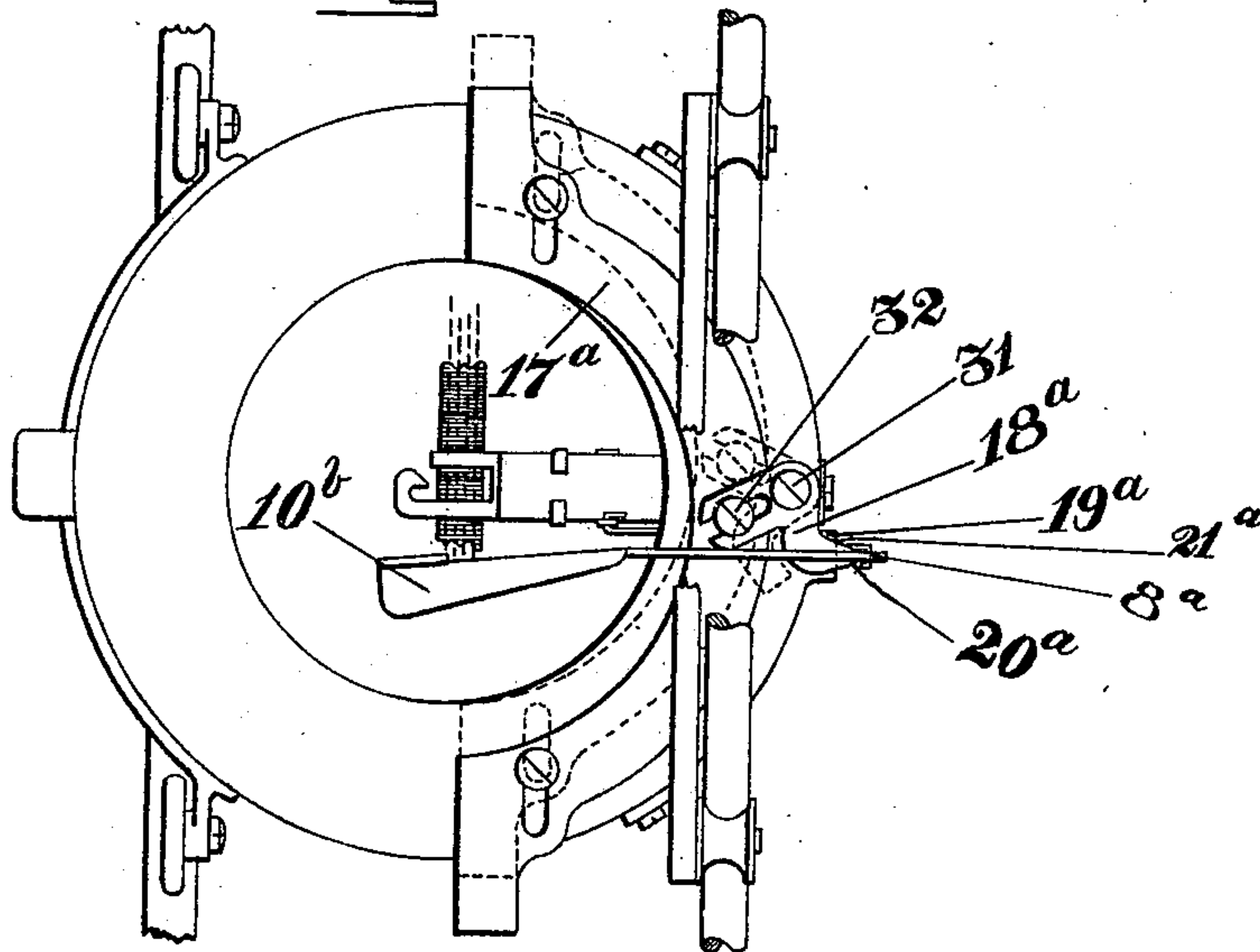
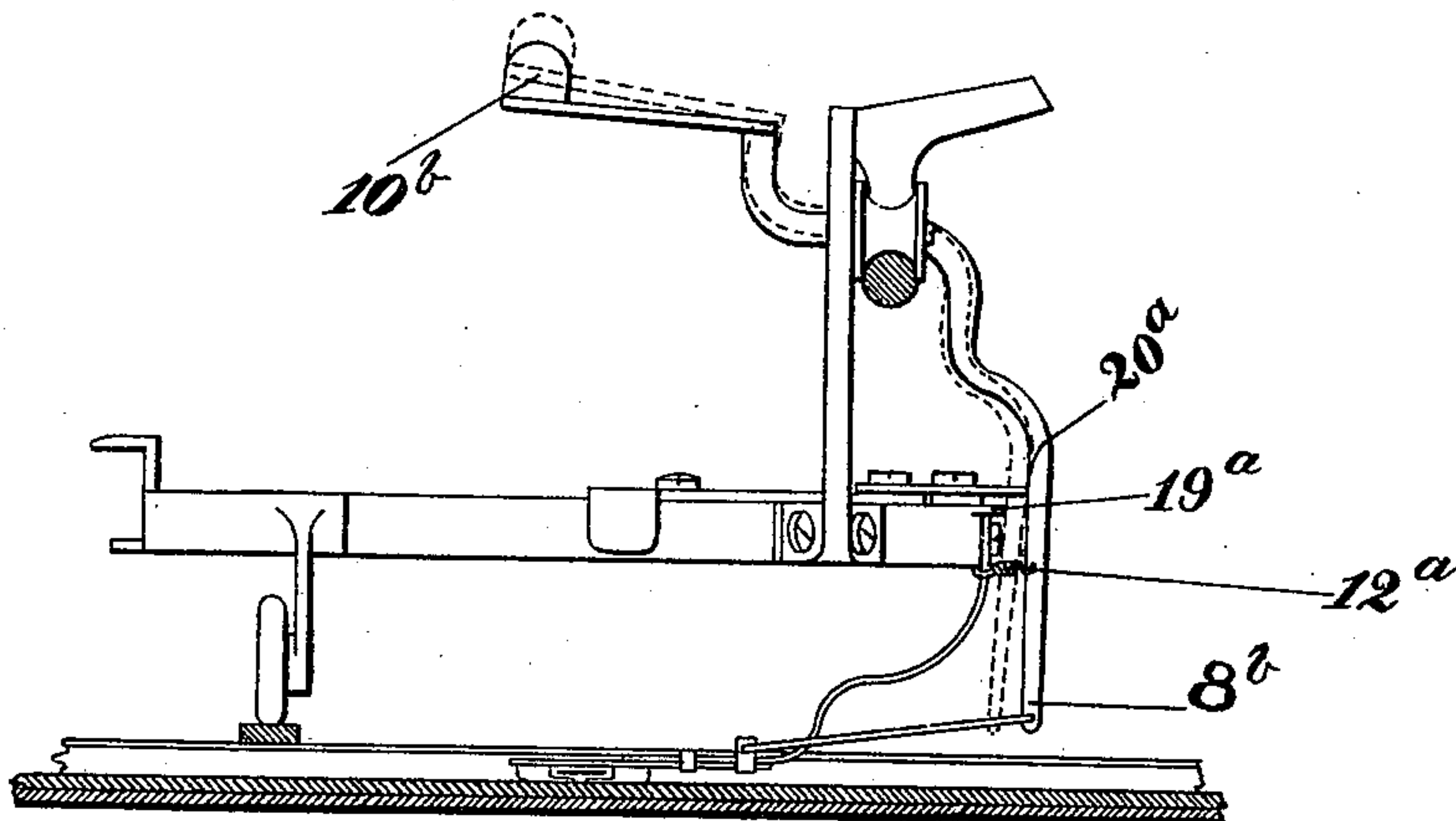


Fig 11.



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UNITED STATES PATENT OFFICE.

GEORGE S. ANDERSON, OF NEW YORK, N. Y., ASSIGNOR TO THE ELLIOTT & HATCH BOOK TYPEWRITER COMPANY, OF NEW YORK.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 631,144, dated August 15, 1899.

Application filed September 22, 1898. Serial No. 691,609. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. ANDERSON, a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

My invention is an improvement in type-writing machines, and relates to the ribbon-feeding mechanism. It comprises mechanism for shifting the ribbon widthwise in order to present the ribbon to the printing-point at different parts of its width, so as to utilize the entire width of the ribbon for printing. The mechanism is such that a single ribbon can be used, or, if desirable, different ribbons can be used side by side to be alternately utilized in different parts of the work. For instance, if it is desirable to print part of the writing in one color and part in another my mechanism is adapted to accomplish this result. I have also provided an independent ribbon mechanism for multiple-copy work.

I have shown my invention applied to a machine adapted for writing in bound books; but it can be readily applied to other type-writing machines.

The general style of machine which I show is the Elliott & Hatch book type-writer; but my ribbon mechanism is different in many particulars from that now used on that machine.

Figure 1 is a plan view of the machine, showing my mechanism for shifting the single-copy ribbon mechanism. Fig. 2 is a side view of that part of Fig. 1 which comprises my multiple-copy ribbon mechanism. Fig. 3 is a side view in section on line X X of Fig. 1. Fig. 4 is an enlarged sectional view in perspective of the parts of the carriage of Fig. 1 which show my ribbon-shifting mechanism. Fig. 5 is a detail modification of the ribbon mechanism of Fig. 4, showing a single ribbon instead of the two ribbons of Fig. 4. Figs. 6, 7, 8, and 9 show a modified form of my invention. Fig. 6 is a plan view of the carriage and of the running-gear which supports the carriage. Fig. 7 is a sectional view on the line Y Y of Fig. 6. Fig. 8 is a perspective view of the carriage and ribbon mechanism of Fig. 6. Fig. 9 is a view of the ribbon-

holder of Fig. 6 seen from beneath. Figs. 10 and 11 show a still different modification of my invention. Fig. 10 is a plan view. Fig. 11 is a side view. In this figure the platen is shown in section.

Referring particularly to Figs. 1 to 4, the two ribbons 1 and 2 are mounted upon the two ribbon-spools 3 in the usual manner. They are separated from each other by the disks 4 4. Both ribbons pass through the ribbon-guide 5 and are separated from each other in the ribbon-guide by the pins 6 6. The ribbon-guide is mounted on the plate 7 and is free to slide thereon. It is connected to the ribbon-shift-key lever 8 by the connecting-wire 9. The ribbon-shift-key lever 8 is provided with key 10 and is pivoted to the carriage by the pin 11 and held normally in a raised position by the spring 12. By pressing the ribbon-shift key the opposite end of the lever 8, which is attached to the connecting-wire 9, is moved to the rear, thereby presenting a new surface of the ribbon at the printing-point. Mounted on the upper bridge 13 of the carriage is the ratchet-bar 14, which is provided with teeth to hold the ribbon-shift key in a plurality of raised positions. Normally the ribbon-shifting key stands above the top of the ratchet-bar 14. The ratchet-bar is provided with four teeth to hold the ribbon widthwise in any one of the four different positions. When the key is in its normal raised position, the surface of the rear ribbon is presented to the printing-point near the back edge of the ribbon. When the shift-key is fastened in the upper tooth of the ratchet-bar, the front surface of the rear ribbon is presented to the printing-point. When the shift-key is fastened in the next to the bottom tooth, the surface of the front ribbon is presented to the printing-point near the back edge, and when the key is fastened in the bottom tooth, as shown in Fig. 4, the front part of the front ribbon is presented to the printing-point. The second tooth from the top is not used when the two ribbons are utilized, as it brings an open space between the two ribbons to the printing-point; but when only a single ribbon is used, as shown in Fig. 5, all of the teeth of the ratchet-bar can be made use of.

Fig. 5 also shows a pointer 15. This pointer extends toward the front of the machine and then is bent around, so as to point toward the rear of the machine directly in front of the printing-point. The ribbon-shifting key 10 can be depressed a distance below the bottom tooth on the ratchet-bar 14 until it is brought into contact with the bridge 13. In this position the entire ribbon 16 is shifted back of the printing-point, so that the printing-point is exposed to view and the pointer 15 is directly in front of the printing-point and indicates the proper position of the letter on the printing-line.

In the modification shown in Figs. 6 to 9, inclusive, the mechanism for shifting the ribbon widthwise also comprises the shift-plate 17, which controls the direction of feed of the ribbon. In this modification the plate 18 is firmly screwed onto the shift-plate 17. The plate 18 is provided with the holding-face 19 and with the holding-face 20. Between these two holding-faces is an inclined or beveled part 21. When the ribbon is feeding toward the left side of the carriage in the position shown in Figs. 6, 7, and 8, the ribbon-shifting-key lever 8^a is in engagement with the holding-face 20. When it is desired to feed the ribbon in the opposite direction or from left to right, the shift-plate 17 is moved from its extreme left-hand position to the extreme right-hand position, slots 21 21 being provided in the shift-plate for this purpose. The shift-plate 17 is fastened to the carriage by means of screws 22 22, which are inserted through the slots 21 21, so as to hold the shift-plate in place on the carriage and also permit of its movement sidewise thereon to feed the ribbon both toward the left and right on the carriage. The shift-plate is provided with suitably-actuated pawls 23 23, which alternately engage with the ribbon-spool ratchets 24 24 to feed the ribbon respectively toward the right and toward the left on the carriage.

As the mechanism for actuating the pawls forms no part of my invention, it need not be shown or specifically described. As an example of actuating mechanism that can be used I refer to that now in public use upon the book type-writer hereinbefore referred to. In that machine the movement of the shift-plate to one side engages the corresponding spool-ratchet with the corresponding pawls and causes a corresponding feed of the ribbon.

When the shift-plate 17 is moved into its extreme right-hand position on the carriage, the holding-face 20 is moved out of engagement with the shifting-key lever 8^a and the holding-face 19 is moved into engagement therewith. The beveled part 21 is provided so as to permit the shifting-key lever 8^a to slide up the incline when the shift-plate 17 is returned from its right-hand position to its left-hand position on the carriage.

In the modification of Figs. 6 to 9 I have shown only a single ribbon; but of course the two ribbons of Figs. 1 to 4 can be utilized, if

desired. The ribbon-guide 5^a is mounted upon the plate 7^a and is connected to the shifting-key lever 8^a by the connecting-wire 9^a. The ribbon-guide is provided with lugs 25 25, which are bent up and folded around plate 7^a, and thus connect the ribbon-guide with plate 7^a and permit it to slide backward and forward thereon. The ribbon-guide is also provided with lugs 26 26, which are merely bent upwardly on each side of the shift-plate 7^a, and in conjunction with lugs 25 25 prevent any lateral movement of the ribbon-guide upon the plate 7^a. The ribbon-guide is also provided with the pointer 15^a, which performs the functions of ribbon-guide and pointer of the construction shown in Figs. 1 to 5.

The dotted lines in Fig. 8 marked A B C D are intended to show the various positions to which the ribbon can be shifted widthwise for printing. The dotted line A shows the printing position of the ribbon when the shifting-lever 8^a is in engagement with holding-face 20. The dotted line B shows the portion which will be moved to the printing-point when the direction of the feed of the ribbon is reversed and the shifting-key lever 8^a is in engagement with the holding-face 19. In order to bring the printing-surfaces C and D to the printing-center, the ribbon-spools must be shifted on the machine, spool 27, Fig. 6, being placed on the opposite side of the carriage on shaft 29 and spool 28 being placed on shaft 30. In any of these printing positions of the ribbon the depression of the shifting-key 10^a moves the ribbon entirely back of the printing-center, so as to expose the writing to view, and moves the pointer 15^a rearwardly until it is just in front of the line of print. In this modification the ribbon is inserted in the guide from beneath, while in the construction of Figs. 1 to 5 the ribbon is inserted in the guide from above, slots being provided in the guide for the insertion of the ribbon. The insertion of the ribbon from above or from beneath is a mere question of convenience.

Figs. 10 and 11 show a still different modification. In this modification instead of having a plate with two holding-faces attached to the shift-plate, as in the modification of Figs. 6 to 9, there is a plate 18^a, mounted on the carriage and pivotally connected therewith by screw 31. Mounted on the shift-plate 17^a is a screw 32. The plate 18^a is provided with a slot, through which screw 32 passes. When the shift-plate 17^a is moved sidewise on the carriage from the position shown in full lines to the position shown in dotted lines, the plate 18^a is thereby forced to revolve about its pivotal screw 31, so that its holding-face 20^a is moved out of engagement with the shifting-key lever 8^b. The spring 12^a then forces the shift-key lever 8^b forwardly until it is brought into engagement with the fixed holding-face 19^a, which is fixedly mounted on the carriage. This last position of the fixed key-lever is

shown by dotted lines in Fig. 11. Plate 18^a is provided with a beveled surface 21^a, which permits the plate to move the shift-key lever from the position shown in dotted lines to that shown in full lines when the shift-plate 17^a is moved from the position shown in dotted lines in the Fig. 11 to that shown in the full lines.

I have also provided mechanism for writing from ribbons a plurality of copies at the same time. Heretofore a plurality of copies have been written simultaneously upon type-writing machines; but in such prior construction only one of the copies has been written from the ribbon and the remaining copies have been written from carbon-paper. The advantage which I secure by writing each of my copies from a ribbon is that I am thereby enabled to secure a number of copies of identical quality, &c. For instance, I may use indelible ribbons for each copy, thereby securing a number of indelible copies.

In my construction I have shown mechanism for making two copies simultaneously; but the multiple-copy ribbon mechanism may obviously be arranged for printing an indefinite number of copies at the same time—as, for example, by winding a number of ribbons on the multiple-copy ribbon mechanism and by inserting the sheet of paper for one copy under each of said multiple-copy ribbons.

Referring to Figs. 1 to 3, mounted independently at the rear of the main frame 40 are the lugs 41 41 and at the front of the frame the lugs 42 42. There are two lugs 41 41—one at each side of the rear of the frame 40—and there are two lugs 42 42—one at each side of the front of the frame. The shaft 43 is mounted in the lugs 41 41, and the shaft 44 is mounted in the lugs 42 42. The shafts are free to revolve in their bearings in the lugs. Shaft 43 is provided with the knurled wheel 45 on the right-hand side of the machine for revolving the shaft by hand, and shaft 44 is provided with hand-wheel 46 for the same purpose. By revolving the hand-wheel 45 in a right-hand direction, or in that in which a screw is driven into a piece of wood, the multiple-copy ribbon 47 can be wound upon shaft 43. By revolving the hand-wheel 46 in a left-hand direction, or in the direction in which a screw is unscrewed from a piece of wood, the ribbon 47 is wound upon shaft 44. In this manner the ribbon may be shifted slightly forward and backward upon frame 40, so as to present different portions of the surface of the ribbon to the line of print. If the ribbon 47 were not thus moved forward and backward on the frame, the printing would always occur in lines across the ribbon, and so the ribbon would be worn out where the lines of print happened to come, while the remainder of the ribbon would not be used at all. By providing means for shifting the ribbon slightly forward and backward on frame 40 this difficulty is obviated. I have also provided mechanism for alternately wind-

ing ribbon 47 on shafts 43 and 44 automatically. On the left-hand end of each of the shafts 43 and 44 are rigidly fastened the crank-arms 48 and 49, respectively. The upper ends of these crank-arms are connected together by crank-shaft 50, so that when either one of the shafts 43 44 is revolved the shaft 50 will be moved simultaneously therewith. Depending from the frame 40 is the lug 51, which is mounted on the left-hand side of the frame, about half-way between the front and the back of the machine. Pivotaly connected with lug 51 is the ratchet-wheel 52. Pivoted to ratchet-wheel 52 is the crank-shaft 53, which at its opposite end is connected to crank-shaft 50. When the ratchet-wheel 52 is revolved continuously in one direction, the crank-shaft 53 moves crank-shaft 50 alternately forward and backward through twice the length of the radius from the pivot-center of ratchet-wheel 52 to the center of connection of crank-shaft 53 with the ratchet-wheel. Therefore the continual revolution of ratchet-wheel 52 in one direction moves the ribbon 47 first backward step by step on frame 40 and then forward step by step on frame 40 alternately. Ratchet-wheel 52 is forced to move step by step in one direction every time the carriage-frame 54 is moved toward the rear of frame 40. This is effected by means of pawl 55, which is hinged to the left-hand side of the carriage-frame 54. When the carriage-frame is spaced forward line by line on frame 40, the pawl 55 trips freely over ratchet-wheel 52; but when the carriage-frame is pushed backward on frame 40 for the purpose of writing a new sheet or page the pawl 55 engages with the teeth of ratchet-wheel 52 and partially rotates that ratchet-wheel, thereby imparting a step-by-step movement to the ratchet always in the same direction. The pawl 55 may be prevented from tripping out of the ratchet-wheel 52 when the carriage-frame is moved backward by any suitable means. I have provided pin 56, mounted on the carriage-frame, for this purpose; but any other suitable means may be employed therefor.

Having thus described my invention and without limiting myself to the precise details shown, what I claim, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination with a carriage, of two ribbon-spools, one or more ribbons mounted thereon, means for feeding said ribbon, a ribbon-holder mounted on the carriage and controlling the position of the ribbon at the printing-point, a ribbon-shift key mounted on the carriage and extending forwardly over the top thereof and operatively connected with the ribbon-holder to shift the ribbon away from the printing-point and expose the writing to view when the shift-key is fully depressed, and means for holding the key in a plurality of positions to bring a plurality of cross-sections of the ribbon to the printing-point, substantially as described.

2. In a type-writing machine, the combination with a carriage, of a plate projecting from the carriage toward the ribbon at the printing-point, a ribbon-guide mounted to slide on the plate and provided with pins, two ribbons, passing through the ribbon-guide and separated therein by pins, a ribbon-shift key mounted on the carriage and connected to the ribbon-guide, and means carried by the carriage for securing the shift-key in a plurality of positions, substantially as described.

3. In a type-writing machine, the combination of two ribbon-spools, and one or more ribbons mounted thereon, means for alternately feeding said ribbon upon each of said spools, a ribbon-holder which controls the position of the ribbon at the printing-point, a ribbon-shifting key operatively connected with the ribbon-holder to shift the ribbon away from the printing-point and expose the writing to view when the ribbon-shifting key is fully depressed, and a shift-plate for controlling the direction of the feed of the ribbon and operatively connected with said ribbon-feeding means and provided with a face for holding the ribbon-shifting key in at least one raised position, the said face being only brought into action on shifting the shift-plate to feed the ribbon in one direction only, and means for holding said ribbon-shifting key in an additional raised position to bring a plurality of cross-sections of the ribbon to the printing-point, substantially as described.

4. In a type-writing machine, the combination of two ribbon-spools, and one or more ribbons mounted thereon, means for determining the direction of the ribbon-feed and for alternately feeding said ribbon upon each of said spools, a ribbon-holder which controls the position of the ribbon at the printing-point, a ribbon-shifting key operatively connected with the ribbon-holder to shift the ribbon away from the printing-point and expose the writing to view when the ribbon-shifting key is fully depressed, and a shift-plate pivoted to the machine and having a swiveling connection with said ribbon-feeding means and provided with a face for holding the ribbon-shifting key in a raised position, and means for holding said ribbon-shifting key in an additional raised position to bring a plurality of cross-sections of the ribbon to the printing-point, substantially as described.

5. In a type-writing machine, the combina-

tion of a stationary platen, a type-carriage movable transversely across the platen to effect the letter-spacing and longitudinally over the platen to effect the line-spacing, a printing-ribbon mounted between the platen and the type-carriage independent of the carriage and held stationary with the platen during the said transverse movement of the type-carriage, but having a longitudinal movement forward and backward over the platen, and means actuated by the longitudinal movement of the carriage for effecting the forward and backward movement of the ribbon, substantially as described.

6. In a type-writing machine, the combination of a stationary platen, a type-carriage transversely and longitudinally movable thereon, a multiple-copy ribbon mounted on the platen and beneath the carriage, and held stationary thereon during the feed of the carriage, and means actuated on the longitudinal return movement of the carriage for giving the ribbon a longitudinal movement on the platen, substantially as described.

7. In a type-writing machine, the combination of the platen and a stationary frame mounted thereon, a carriage-frame mounted on said stationary frame and movable longitudinally forward and backward thereon to effect the line-spacing, a type-carriage mounted on the carriage-frame and movable transversely thereon to effect the letter-spacing, ribbon-shafts mounted at the front and at the back of said stationary frame and holding the blanket-ribbon which extends over the platen, crank-arms and a connecting-rod which connect said ribbon-shafts together, a ratchet-wheel mounted on said stationary frame, a crank-shaft connecting said ratchet-wheel and said connecting-rod together, and a pawl mounted on the carriage-frame and adapted to feed the ratchet-wheel while the carriage-frame is being moved in one direction upon said stationary frame, and means for tripping said pawl over the ratchet-wheel when the carriage-frame is moved in the opposite direction upon said stationary frame, substantially as described.

Signed by me, in New York city, New York, this 21st day of September, 1898.

GEORGE S. ANDERSON.

Witnesses:

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