

(No Model.)

2 Sheets—Sheet 1.

G. B. WEBB.
TYPE WRITING MACHINE.

No. 470,273.

Patented Mar. 8, 1892.

Fig. 1,

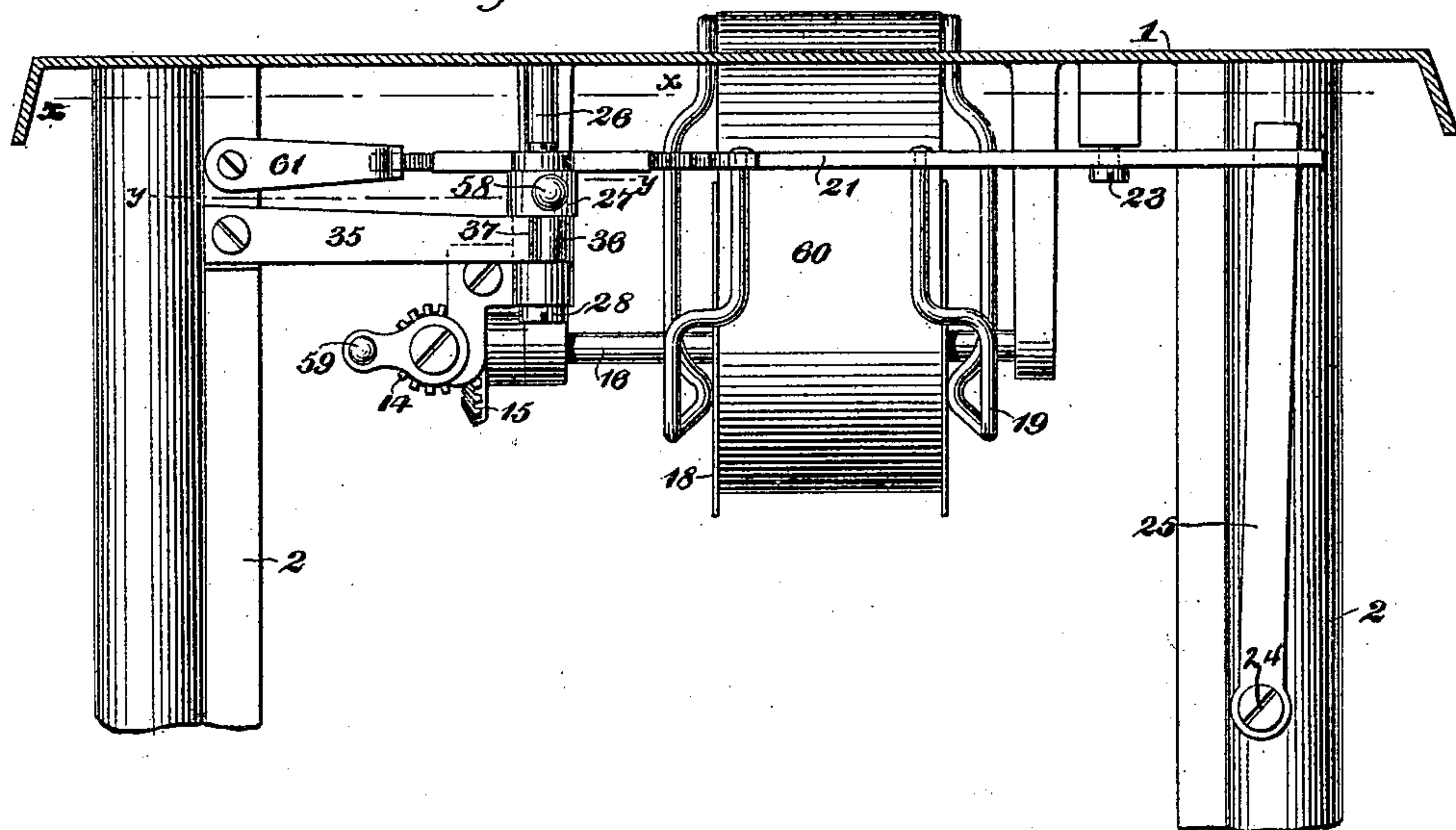
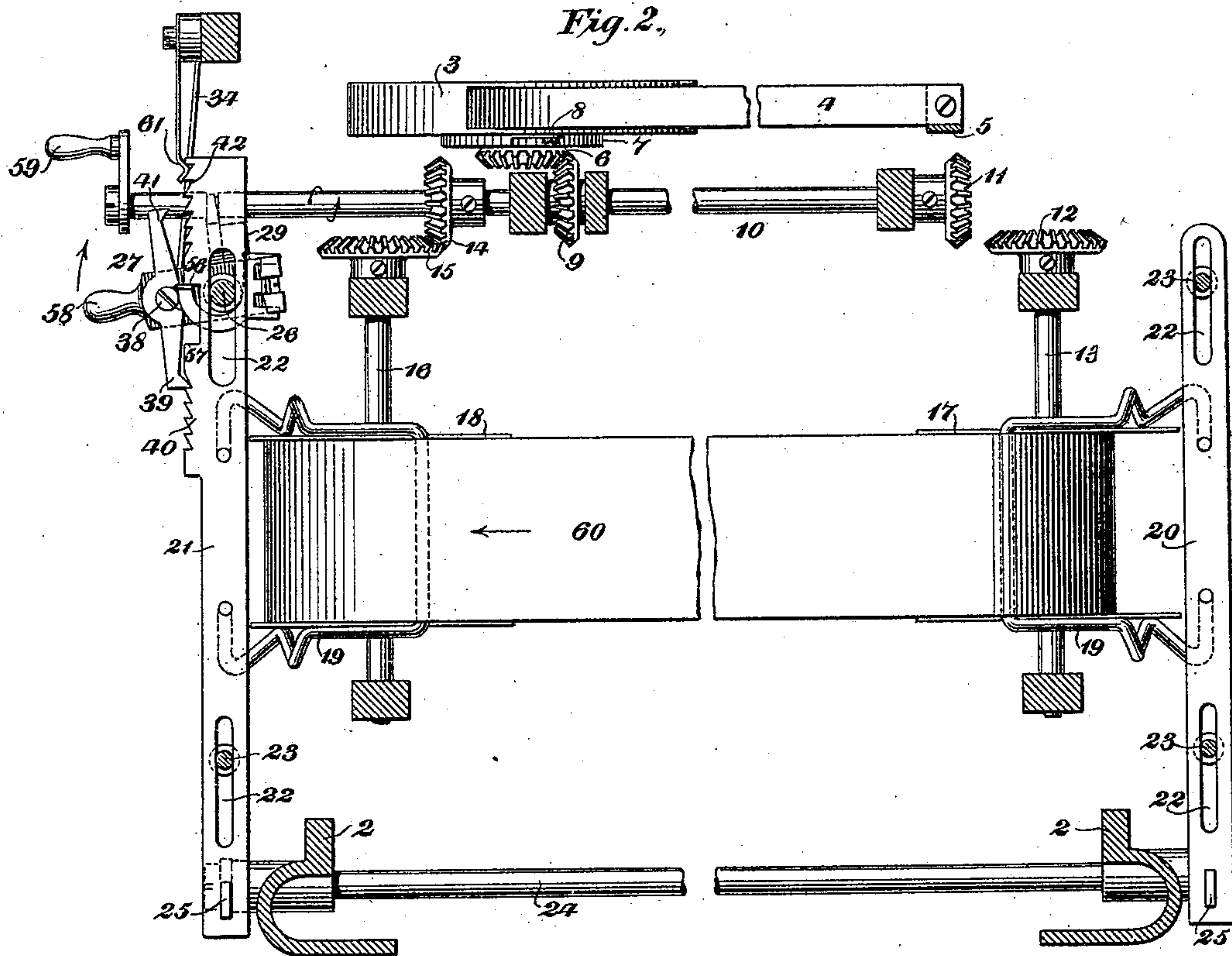


Fig. 2,



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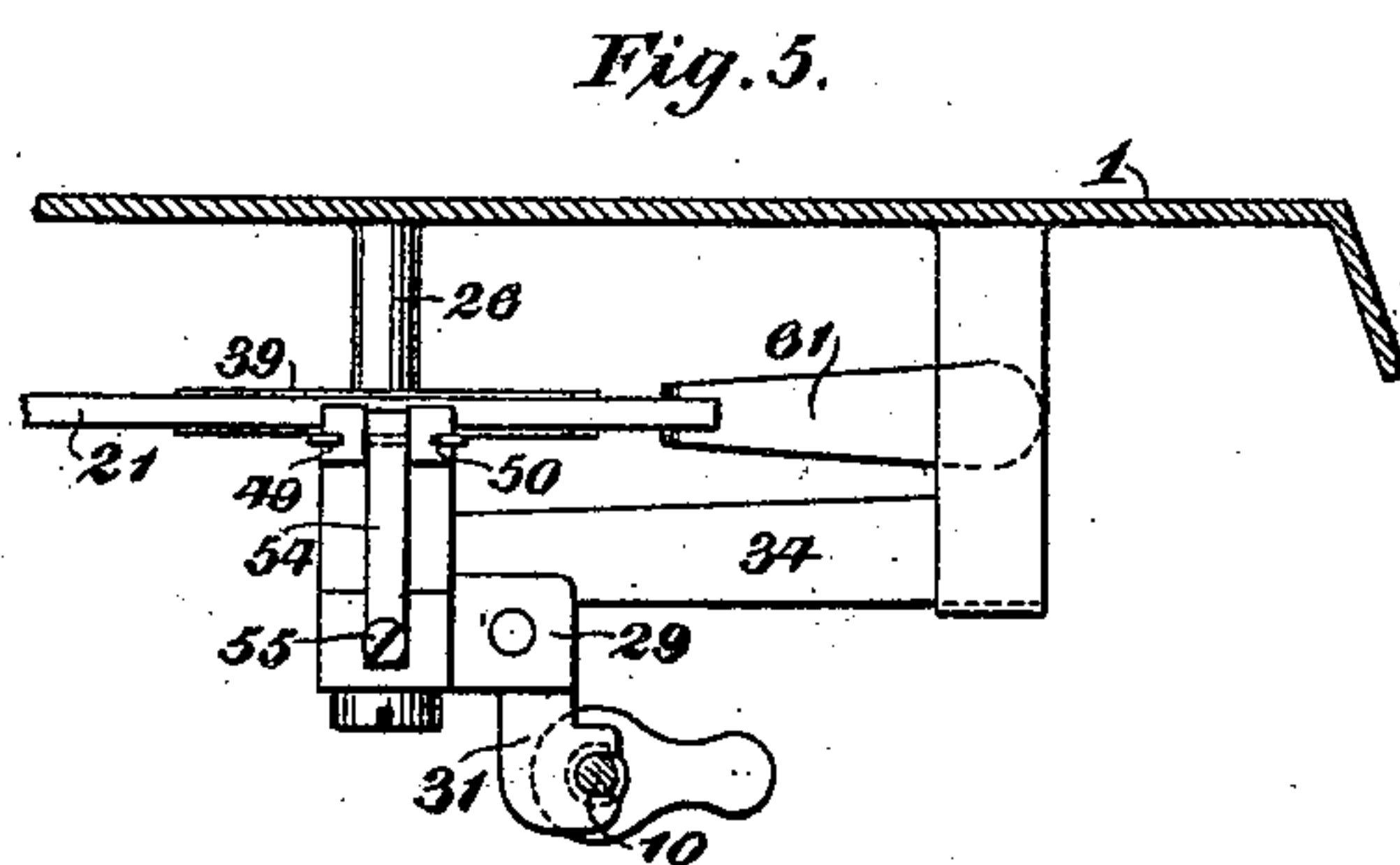
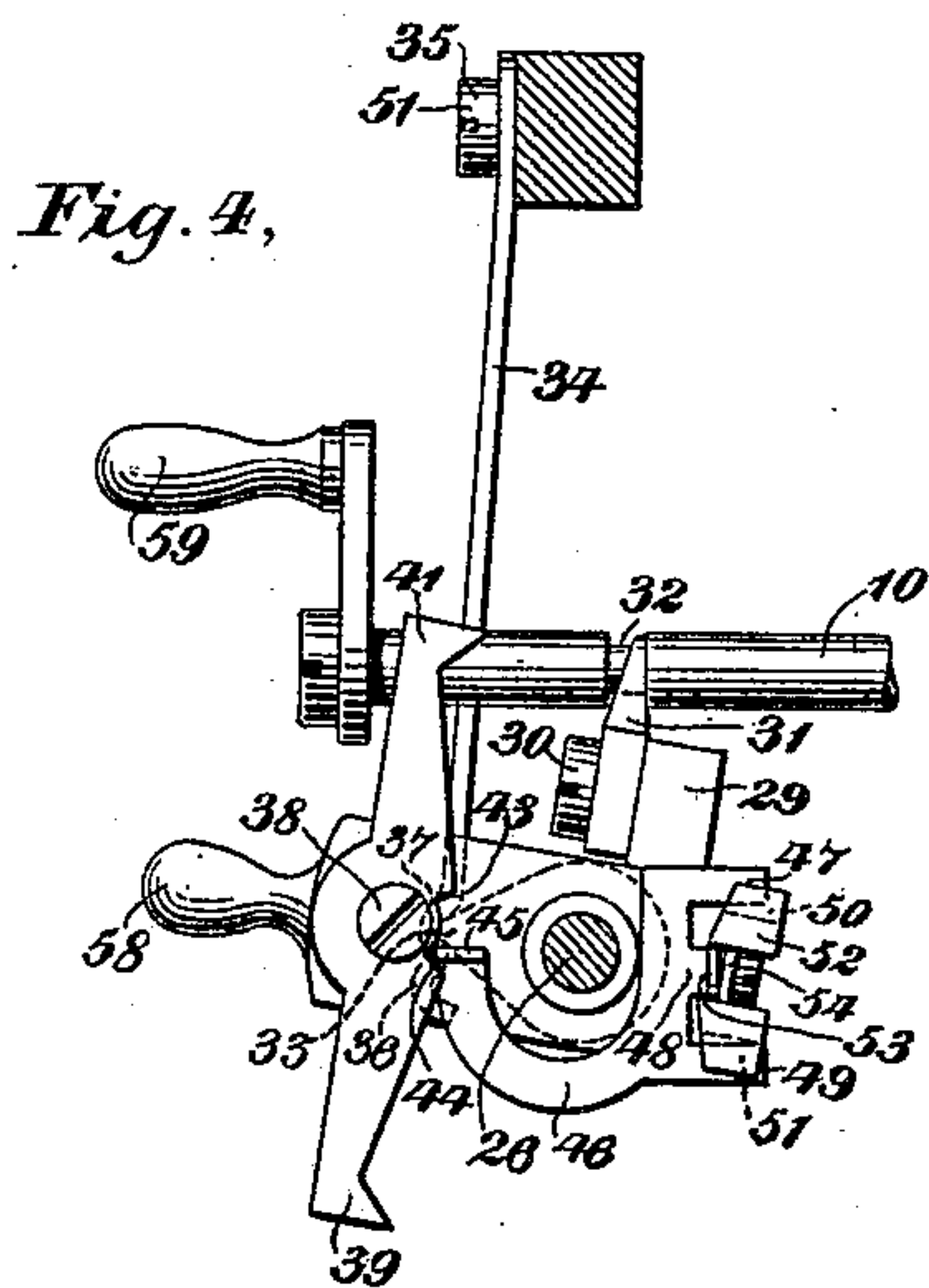
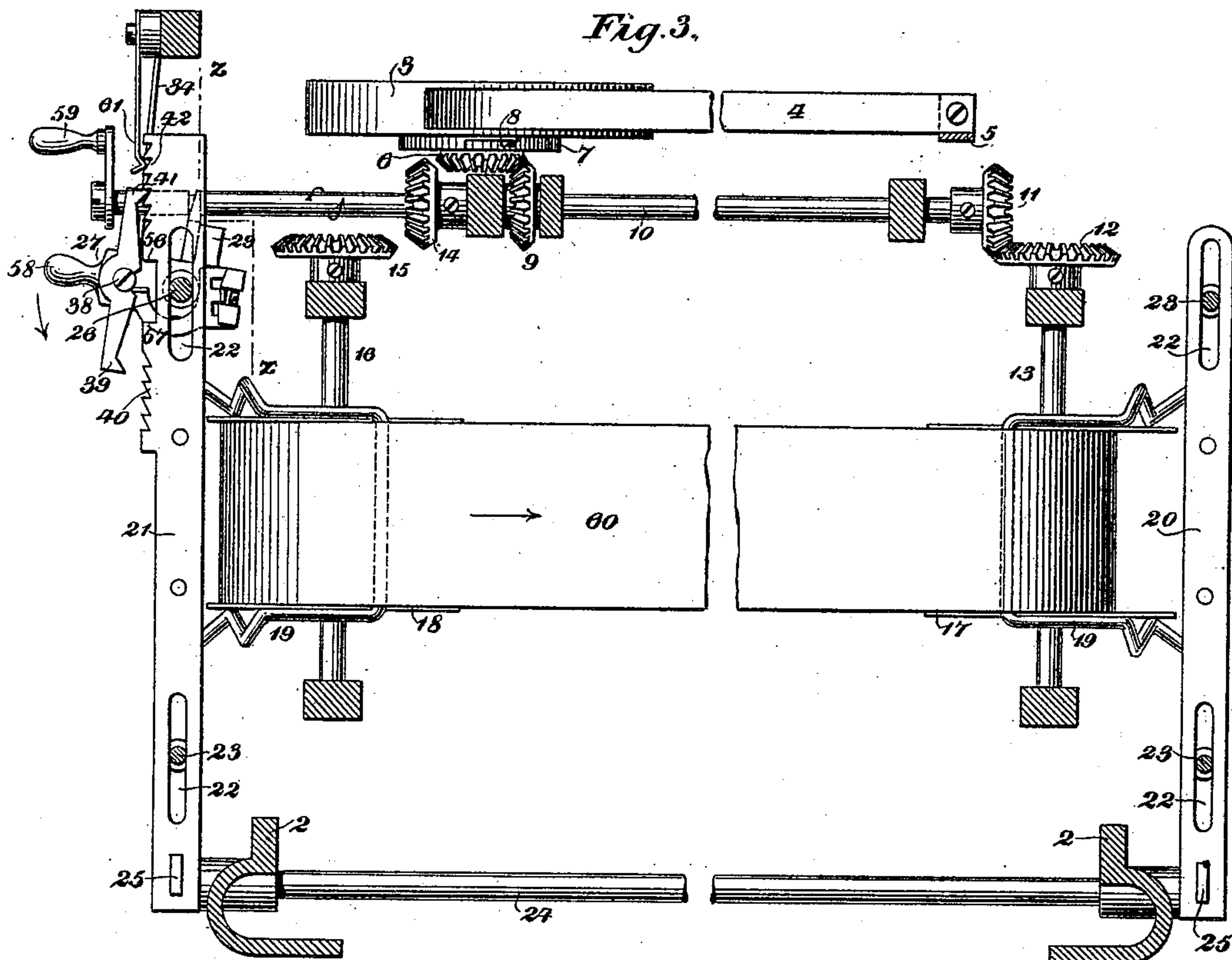
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Edward Thorpe.
Jacob Felbel.

Inventor
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UNITED STATES PATENT OFFICE.

GEORGE B. WEBB, OF NEW YORK, N. Y., ASSIGNOR TO THE REMINGTON
STANDARD TYPE WRITER MANUFACTURING COMPANY, OF SAME
PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,273, dated March 8, 1892.

Application filed June 20, 1891. Serial No. 396,901. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. WEBB, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention has for its main object to provide means for shifting the inking-ribbon laterally or widthwise at the time the travel of the ribbon lengthwise is reversed for the purpose of bringing into use a new or fresh portion of the ribbon and preventing the heedless operator from using any one portion or field of the ribbon for an undue length of time, to the detriment of the ribbon and the quality of the work being done.

To these ends my invention consists in the features of construction and combinations of devices hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of so much of a type writing machine as is necessary to illustrate my invention. Fig. 2 is a horizontal section taken at the line $x x$ of Fig. 1. Fig. 3 is a similar section with the parts shifted to cause the ribbon to travel in a direction the reverse of that it is shown as moving in at Fig. 1, and to also cause a different or fresh portion to travel across the printing-point. Fig. 4 is an enlarged horizontal section taken at the line $y y$ of Fig. 1 to more clearly show the construction of some of the new parts, and Fig. 5 is a vertical section taken at the line $z z$ of Fig. 3.

In the several views the same part will be found designated by the same numeral of reference.

The machine illustrated in part in the accompanying drawings is that known as the "Remington" type-writer, to which my improvements are especially applicable. In said machine the inking-ribbon is wound step by step from one spool or bobbin onto the other by means of the carriage-driving power, a main shaft, two counter-spool-shafts, and three sets of bevel-gears, and the construc-

tion is such that when the ribbon has been unwound from one spool it may be reversed by hand and rewound automatically upon said spool by a longitudinal movement of the main shaft to disengage one set of the bevel-gears and throw into engagement another set of said gears. In the said machine the ribbon-spools are each connected to a horizontal slide, and said slides are connected together, so as to move in unison by means of rocker-arms and a rock-shaft. By this construction the ribbon is adapted to be moved by hand transversely or in the direction of its width, so that the entire surface of said ribbon may from time to time travel in register with the printing-point and be utilized, thus preserving the form and life of the ribbon and conducing to greater uniformity in the character of the impressions. Although provision is thus made in the Remington machine for moving the ribbon widthwise, the fact is that many operators pay insufficient attention to the means for shifting the ribbon transversely and continue an undue length of time to use the ribbon along a single line, with the result that the ribbon soon loses its shape and becomes prematurely worn and useless.

By my present invention I have so connected together the means for reversing the longitudinal movements of the ribbon with the means for shifting the ribbon transversely that at every second reversal of the longitudinal travel of the ribbon the ribbon is at the same time or by the same movement automatically shifted widthwise to bring into use a fresh portion of the surface, and hence the necessity for care or attention on the part of the operator so far as any shifting of the ribbon widthwise is concerned is wholly eliminated.

1 designates the top plate of the machine, and 2 the frame-work.

3 is the spring driving drum or disk, to which is attached one end of a strap 4, whose other end is connected to some part of the paper-carriage, as indicated at 5. Axially of the shaft of the drum is arranged a bevel-wheel 6, which carries a ratchet-wheel 7, adapted to be acted upon by a driving-pawl 8, pivoted to the drum, the construction be-

ing such, as heretofore, that when the carriage travels from right to left the said pawl turns said ratchet-wheel and bevel-gear with the drum, and when the carriage travels from left to right the pawl slips idly or inoperatively over the ratchet-wheel and the latter and the bevel-gear 6 remain stationary.

The bevel-gear 6 is always in engagement with a bevel-gear 9, sleeved on the main shaft 10, which is adapted to turn in bearings in the frame-work. At the right-hand end of said shaft is secured a bevel-gear 11, which is adapted to mesh with a bevel-gear 12 on the right-hand spool-shaft 13, which is mounted to rotate in bearings in the frame-work. On the shaft 10 is secured another bevel-gear 14, which is adapted to engage with a bevel-gear 15 on the left-hand spool-shaft 16, which is also mounted to rotate in bearings in the frame-work. A ribbon-spool 17 is splined on the shaft 13, and a similar spool 18 is splined on the shaft 16. A wire frame 19 is bent to embrace each spool and to form a guide and support for the ribbon. The ends of the wire frame 19 on the right are riveted to a sliding bar 20, and the ends of the wire frame on the left are riveted to a sliding bar 21. The said bars are formed with slots 22 for the passage of supporting-screws 23, and said bars are connected together to move in unison by a transverse rock-shaft 24 and rocker-arms 25, one at each end of the rock-shaft.

The rearmost slot of the sliding bar 21 is slightly wider than the others and embraces a depending pin 26, fixed to the top plate and provided with a shoulder to support said bar. On said pin is pivoted a support or switch 27, which is held from falling by the head of a vertical screw 28, whose shank engages a threaded hole in the pin. The said support is formed with a lateral projection 29, to which is attached by a screw 30 a bifurcated arm 31, which straddles a circumferential groove 32, formed in the main shaft, and the said support 27 is beveled or chamfered to provide a nose or projection 33, as shown by dotted lines at Fig. 4, with which co-operates a flat spring 34, attached to the frame-work at 35 and provided with two corrugations 36 and 37, adapted each to fit over said nose and hold the support 27 in either of the two positions which it may be moved to. Upon said support is pivoted at 38 a duplex driving-pawl, one end 39 of which is adapted to coact with a rack 40 on the slide 21 and the other end 41 of which is adapted to co-operate with another rack 42, also on said slide, but with its teeth cut or formed in a direction the reverse of those of the rack 40. The duplex pawl is cut away or notched at its inner edge to form two shoulders 43 and 44, one on either side of the pivot or center of motion of the pawl, and with these shoulders is adapted to engage the upwardly-extending end 45 of a trip piece or shifter 46, which is curved to pass around the pivot-pin 26 on one side, and which at its inner end is E-shaped

or formed with three flat prongs or forks 47, 48, and 49, the forks 47 and 49 being fitted loosely in under-cuts or grooves 50 and 51 in elevated portions 52 of the support, and the middle fork 48 being formed with an up-turned end 53, against which bears the free end of a vertically-arranged flat spring 54, secured to the support by a screw 55. Between the racks 40 and 42 are formed two shoulders 56 and 57, adapted to contact alternately with the projection 45 and assist in shifting it from one side of the pivot of the duplex pawl to the other to enable the said trip-piece to first hold the pawl end 39 in engagement with its rack and then to hold the pawl end 41 in engagement with its rack, and so on alternately. The support is provided with a handle 58, and the main shaft is also provided with a handle 59, by either of which the longitudinal and transverse movements of the ribbon 60 may be effected. Engaging with the rack 42 is a spring-check 61 to prevent any overthrow of the slide 21 or any accidental movement thereof.

By the construction described the slide 21, which is connected to both ribbon-spools, is coupled to the main shaft and in a manner such that when said shaft is moved endwise to reverse the direction of movement of the ribbon longitudinally said slide is caused to move at right angles to the axis of said shaft and through its connections move the ribbon widthwise.

By means of the double pawl and rack, the trip-piece, and the vibratory support or switch the slide is caused to move back and forth and impart a step-by-step reciprocatory movement to the ribbon widthwise, the longitudinal movements of the ribbon being effected by the gearing employed heretofore.

From what has been said above the following explanation of the mode of operation will be readily understood by those skilled in the art.

Referring to Fig. 2, the set of miter-gears 14 and 15 are in engagement, and by the rotation of the main shaft 10 the counter-spool-shaft 16 is turned, and with it the spool 18, in a direction to wind the ribbon thereupon, and from right to left. When the ribbon has been thus wholly unwound from the spool 17, it may be reversed or set to wind back upon said spool by an endwise push on said shaft 10 to cause the gears 14 and 15 to disengage and the set of gears 11 and 12 to mesh with each other. During the said movement of said shaft the support or switch 27 is vibrated by reason of the connecting-arm 31. In this view, Fig. 2, the ribbon is shown at the limit of its forward transverse throw, and at the next endwise movement of the shaft 10 (to engage the gears 11 and 12) the pawl 39 is withdrawn from its rack 40 and the pawl 41 moved into engagement with its rack. This is accomplished by the spring-actuated trip 46, which, on account of the contact of the stop or shoulder 56 and the projection 45, is

prevented at this time from moving bodily with the support or switch 27, and as the latter is moved in the direction of the arrow the pivot of the duplex pawl is carried with it, and when the center of said pivot has moved past the projection 45 the trip-piece 46 is left free to be swung over independently by the spring 54, (which moves with the support, as indicated,) so that its projection 45 may engage the shoulder 44 of the duplex pawl and vibrate the latter about its pivot, so as to throw the pawl 39 out of engagement and the pawl 42 into engagement, as shown at Fig. 3. When this has taken place, the ribbon is caused to move transversely rearwardly at every second reversal of the longitudinal motion of the ribbon. In practice I have thus far moved the ribbon crosswise step by step four times each way; but of course this number may be varied to suit the desires of the manufacturer by increasing or diminishing the number of teeth of the racks 40 and 42 and the distance apart of the stops, as shoulders 56 and 57.

Referring to Fig. 3, it will be seen that the shaft 10 has been moved endwise and that the gears 11 and 12 are in engagement to wind the ribbon lengthwise from the spool 18 to the spool 17, and also that the pawl 41 is in engagement with the rack 42. When the spool 17 has been filled and it is desired to reverse the direction of movement again of the ribbon, the shaft 10 is moved endwise to disconnect the gears 11 and 12 and engage the gears 14 and 15, and at the same time the support or switch 27 is vibrated in the direction of the arrow and the pawl 41 caused to engage another tooth of its rack, so that when the main shaft and the support or switch are again moved in the reverse direction the said pawl carried by the latter may push the slide 21 the distance of one tooth rearwardly and through the described connections move the inking-ribbon a like distance in the same direction. The slide 21, by means of the rack 42 and pawl 41, is thus moved rearwardly intermittently (say four times) until the stop or shoulder 57 on said slide contacts with said projection 45, when a vibration of the switch 27 in the direction of the arrow at Fig. 3 will carry the center of the pawl-pivot past the said projection and allow the trip-piece 46 to be vibrated by its spring to throw the projection 45 against the shoulder 43 to disengage the pawl 41 and engage the pawl 39 with the outermost or front tooth of the rack 40. Then as the shaft 10 is moved back and forth endwise to reverse the ribbon the slide 21 is moved forward step by step and through its connections the ribbon is moved in the same direction and to the same extent, (say the distance of four notches.) When the pawl 39 and rack 40 are in engagement, the ribbon is moved toward the front whenever the main shaft is moved toward the left, and when the pawl 41 and rack 42 are in engagement the ribbon is moved toward the rear whenever the main shaft is moved toward the right. The corru-

gation 36 engages the nose 33 when the switch is in the position shown at Fig. 2, and the corrugation 37 embraces the nose 33 when the switch is in the position shown at Fig. 3, and by this construction the switch and its accessories are properly held against accidental movement while the writing is taking place.

Instead of connecting both spools to travel in unison, they may be disconnected and the spool 18 only made capable of a sliding movement on its shaft. In this arrangement the ribbon, instead of moving bodily forward and backward, will have a vibratory motion, and the rock-shaft 24, the rocker-arm 25, and the slide 20 may be dispensed with.

In lieu of the duplex rack and duplex pawl, a single rack and pawl may be employed where it is desired to have the ribbon move step by step widthwise in only one direction, or where some other means, as a spring, may be desired to move it in the opposite direction, and it will be understood that numerous other changes in detail construction may be made without departing from the gist of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination, with the driving-power, of a main shaft, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each other and to the ribbon-spools, and connections, substantially as described, between one of said slides and the main shaft, whereby the endwise movements of said shaft may be transmitted to said slide and the ribbon moved transversely or in the direction of its width.

2. In a type-writing machine, the combination, with the driving-power, of a main shaft connected thereto and capable of endwise movements, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each other and to the ribbon-spools, a rack on one of said slides, a pawl for engaging said rack, and a switch carrying said pawl and connected to the reciprocatory main shaft.

3. In a type-writing machine, the combination, with the driving-power, of a main shaft, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each other and to the ribbon-spools, a duplex rack on one of said slides, a duplex pawl for driving said racks, and a switch carrying said duplex pawl and connected to the main shaft.

4. In a type-writing machine, the combination, with the driving-power, of a main shaft, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools

- capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each other and to the ribbon-spools, a duplex rack on one of said slides, stops or shoulders on said slide, a duplex pawl for driving said racks, a switch carrying said duplex pawl and connected to the main shaft, and a spring-actuated shifter for said duplex pawl.
5. In a type-writing machine, the combination, with the driving-power, of a main shaft, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each other and to the ribbon-spools, two racks on one of said slides, stops or shoulders on said slide, a duplex pawl for driving said racks, a switch carrying said pawls and connected to the main shaft, and means, substantially as described, for automatically moving said pawls alternately into and out of engagement with their racks.
6. In a type-writing machine, the combination, with the driving-power, of a main shaft, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each other and to the ribbon-spools, two racks on one of said slides, stops or shoulders on said slide, a duplex pawl, and a switch carrying said pawls and also a vibratory spring-actuated shifter and connected to said main shaft.
7. In a type-writing machine, the combination, with the driving-power, of a main shaft, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each

other and to the ribbon-spools, two racks on one of said slides, a duplex pawl, a switch having a nose, a spring having two corrugations, and a coupling between said switch and the main shaft.

8. In a type-writing machine, the combination, with the driving-power, of a main shaft, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools capable of turning with their shafts and also of sliding endwise of the same, an inking-ribbon, a pair of slides connected to each other and to the ribbon-spools, two racks on one of said slides, a spring-check for said slide, a duplex pawl, and a switch connected to the main shaft.

9. In a type-writing machine, the combination, with the driving-power, of a main shaft connected thereto and revolved thereby, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools, an inking-ribbon, a slide connected to the inking-ribbon, and means, substantially as described, connected to the main shaft for imparting to said slide a step-by-step movement upon endwise movements of the main shaft.

10. In a type-writing machine, the combination, with the driving-power, of a main shaft connected thereto and capable of endwise movements, two spool-shafts adapted to be alternately driven by said main shaft, two ribbon-spools, an inking-ribbon, a slide connected to the inking-ribbon, a rack on said slide, a pawl for driving said rack, and a switch carrying said pawl and connected to the endwise-movable main shaft.

Signed at New York city, in the county of New York and State of New York, this 18th day of June, A. D. 1891.

GEORGE B. WEBB.

Witnesses:

H. D. DONNELLY,
JACOB FELBEL.