

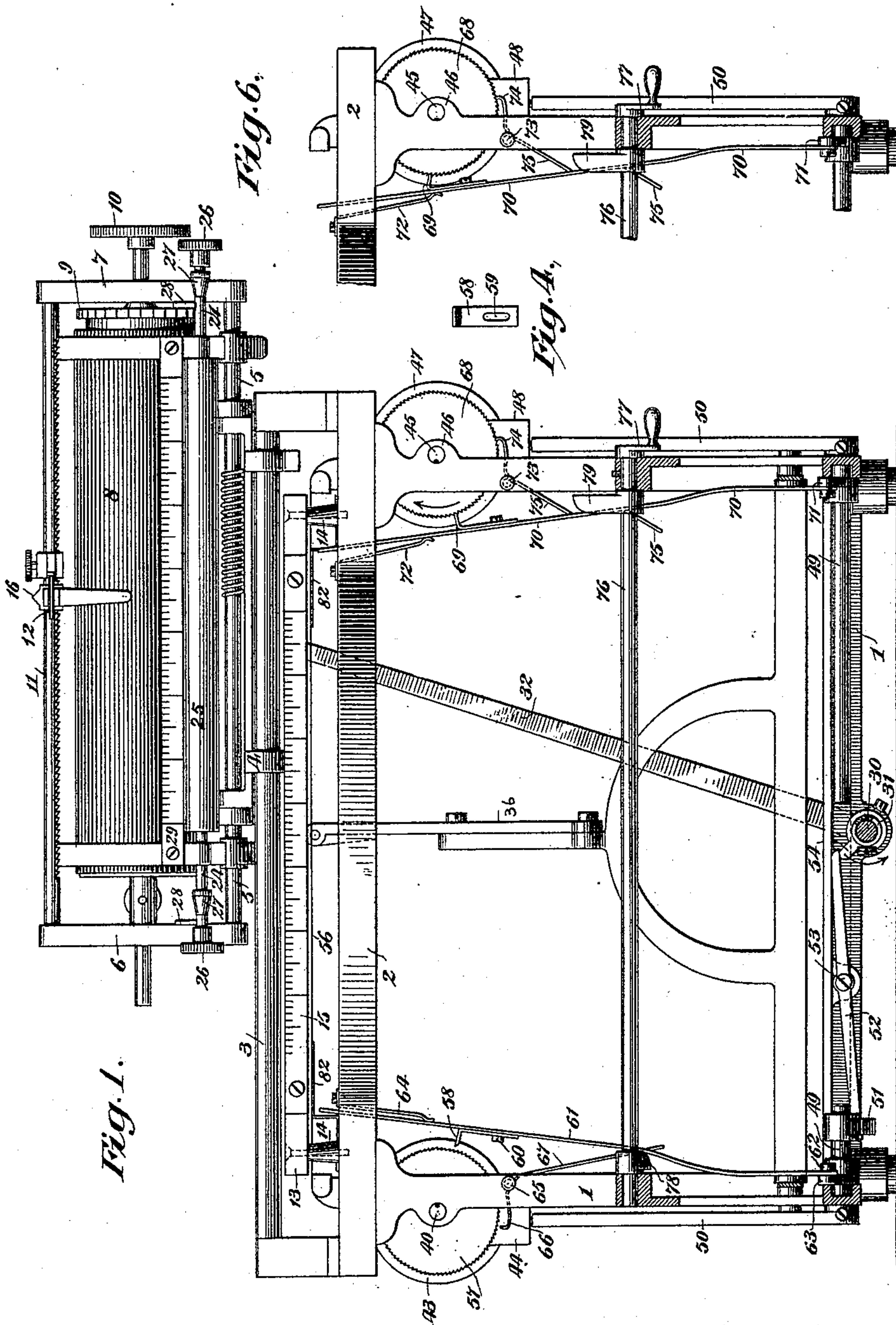
(No Model.)

2 Sheets—Sheet 1.

W. J. BARRON.  
TYPE WRITING MACHINE.

No. 470,172.

Patented Mar. 8, 1892.



Witnesses  
C. E. Ashley  
H. W. Lloyd.

Inventor  
Walter J. Barron.  
By his Attorney  
Jacob Feltel

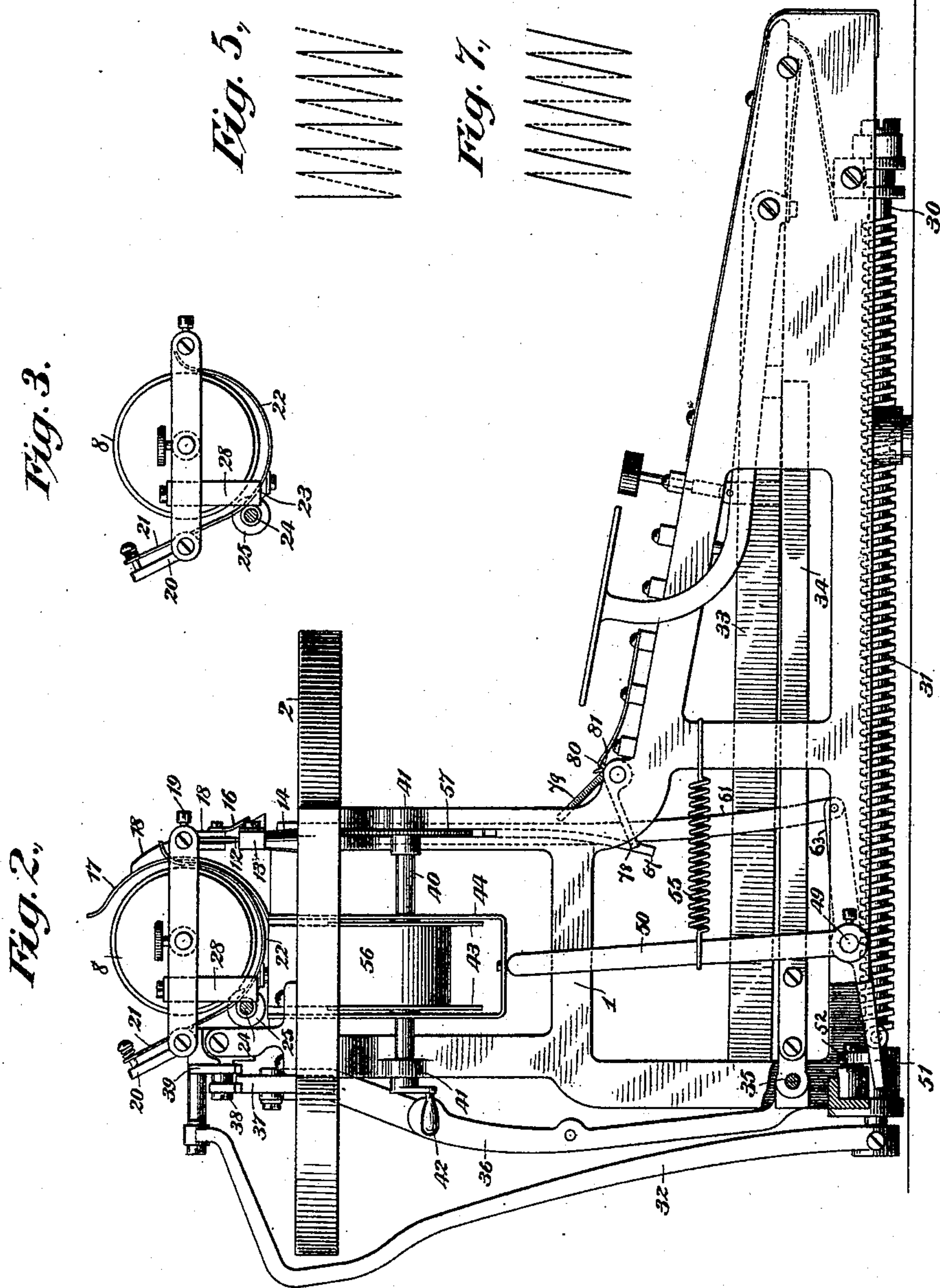
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# UNITED STATES PATENT OFFICE.

WALTER J. BARRON, OF BROOKLYN, NEW YORK.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,172, dated March 8, 1892.

Application filed September 3, 1891. Serial No. 404,590. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER J. BARRON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings 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 relates, first, to the paper-feeding devices, and, secondly, to the ribbon-feeding devices; and it 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 front view of a type-writing machine embodying my improvements, the keyboard being removed to afford a view of the construction and arrangement of the devices at the lower rear portion of the machine which form part of the ribbon-moving mechanism, and the paper-carriage being turned up to afford a view of the paper-feeding devices. Fig. 2 is a side elevation of the machine with the keyboard added and the paper-carriage down in working position, and with a portion of the frame-work at the rear of the machine broken away to show the arrangement of the ribbon-feeding devices, and with the knob or hand-wheel at the left-hand end of the pressure-roller shaft omitted to avoid complication of the view. Fig. 3 is a side view of the paper-carriage with the pressure or feeding roller out of engagement with the platen. Fig. 4 is a face view of one of the driving-pawls of the ribbon-spool ratchet-wheel. Fig. 5 is a diagram to illustrate the movements of the ribbon and the manner in which the type strike the same. Fig. 6 is a partial front view similar to Fig. 1, but exhibiting the devices for feeding the ribbon longitudinally, as arranged to operate on the downward movement of the driving-pawl in lieu of the upward movement, as in the arrangement shown at Fig. 1; and Fig. 7 is a diagram to show the movement of the ribbon and the manner in which the type strike the same when the ribbon is fed in accordance with the plan shown at Fig. 6.

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

The machine illustrated will be recognized as that known as the "Caligraph," to which

my ribbon-feeding improvements are more especially adapted.

1 designates the frame-work of the machine; 2, the type-ring; 3, the carriage guide-bar; 4, a yoke adapted to slide on said guide-bar and connected with the rear rod 5 of the paper-carriage. In the side bars 6 and 7 of the paper-carriage is mounted to rotate the usual cylindrical paper-platen 8, having at one end a ratchet-wheel 9, adapted to a line-space lever and platen-check, (not shown,) and having also at the end of its axle a hand-wheel 10, by which the platen may be turned. The front rod 11 of the carriage is provided, as usual, with an anti-friction roller 12, which travels on a track or way 13, supported on pillars 14 at each end and secured in place by long vertical screws passing through the track and pillars and entering tapped holes in the type-ring or top plate 2. To the front side of the track or way is attached the usual machine-scale 15, with which co-operates a pointer 16, arranged centrally of the front rod of the paper-carriage. 17 is a paper-guide for the middle portion of the sheets, the said guide, pointer, and wheel all being mounted on a bracket 18, attached by a screw 19 to the front carriage-rod.

The rear carriage-rod near each end is provided with a bracket 20, supporting an arm 21, which is extended and curved to pass under the platen and serve as an end paper-guide 22. Upon each of said arms is affixed a bracket 23 to support the shaft or axle 24 of a pressure or feeding roller 25, which preferably is provided at each end with a knurled hand-wheel 26. Near each end of said shaft is formed or provided a cam or wedge 27 to co-operate with depending arms 28, screwed at their upper ends to the end bars of the paper-carriage. Each cam or wedge is tapered in the same direction, so that when the shaft 24 and roller 25 are moved endwise toward the left the depending arms 28 may both act on said cams or wedges to simultaneously force both ends of the shaft, and hence the pressure-roller, outwardly or away from the paper-platen, as shown at Fig. 3. The pressure-roller is made slightly shorter than the distance between the supporting-brackets 23, in order that the endwise movement referred to may be accomplished. The bevel or taper



of the wedges is such that the roller may be moved out of contact with the platen a sufficient distance to enable the paper used to be freely inserted or removed without operating  
 5 or disconnecting the line-spacing devices or disconnecting the usual platen-check and without rotating the platen. By this construction the paper may be more speedily inserted and removed. By constructing and  
 10 arranging the feed-roller so that it may have an endwise movement provision is also made for feeding the paper laterally either to the right or left, so that any omitted character in a line may be printed in its exact place and  
 15 so that at the end of the line one or more extra letters may be added, if necessary or desired.

In correcting type-written matter after the sheet has once been withdrawn from the  
 20 platen it is quite difficult to so reinsert the sheet as that the blank space which is to be supplied with a character will come exactly centrally of the printing-point, or, in other words, it is almost impossible to bring the  
 25 line of print into exact register again with the usual scale 29 on the under side of the platen, and if this be not done the printing of the character inserted must take place nearer one letter than the other, instead of midway  
 30 between the two adjacent letters of the word, which gives to the work an appearance of improper letter-spacing of the carriage and is unsightly.

In the machine illustrated at Fig. 1 it will  
 35 be observed that the shaft of the pressure-roller may be moved endwise about a letter-space distance before the depending arms 28 can act upon the cams to throw off the pressure-roller, and this movement is provided to  
 40 enable the lateral feed of the paper.

It will be understood that the pressure-roller operates to hold the paper firmly against the platen and at all times, excepting when the cams are under or in line with the depending arms 28, and hence that if the pressure-roller be moved endwise toward the left,  
 45 Fig. 1, the paper will be carried with it by reason of the frictional contact of said roller with the paper. In feeding the paper laterally the pressure-roller should not be moved  
 50 endwise its full distance or far enough to allow the cams to be acted upon by the depending arms 28. With each such endwise movement of the roller the paper is moved laterally a letter-space distance; but this distance may be lessened, of course, by decreasing the extent of the endwise movement of the pressure-roller, and the paper may therefore be  
 55 moved laterally only very slightly, instead of a full letter-space distance, at one movement of the pressure-roller, in accordance with the exigencies of the case. If it be desired to move the paper sidewise a distance greater than that of a letter-space, the paper  
 60 may be held by the thumb at one edge after the first endwise movement of the roller, while the roller alone is returned to its first

position, and the thumb may then be removed and the roller moved endwise again to carry the paper still farther laterally. In this way  
 70 the paper may be moved any number of letter-spaces or fractions thereof laterally by the pressure-roller within the limits of the carriage, and for this reason several additional letters or an extra word may be added to the  
 75 line of printing.

By prolonging the axis of the pressure-roller and providing a finger-piece, as 26, the said roller may not only be moved endwise, but may be also rotated, which latter is a great  
 80 desideratum, since by turning said roller the reinserted sheet may be fed in line-space direction to any extent without rotating the platen or actuating the usual line-spacing devices, and hence the line to be printed can be  
 85 brought to register with the printing-point with great nicety and without pulling upon the paper with the hands, as usual heretofore, at the risk of tearing or soiling the sheet.

Centrally of the machine and extending  
 90 from the front to the back is a rod or shaft 30, about which is coiled a carriage-driving spring 31, and at the rear end of said rod or shaft is connected an arm 32, which is connected with the paper-carriage, as in the cali-  
 95 graph. Beneath the key-levers 33 is a universal bar-frame 34, pivoted at 35 and provided with an arm 36, carrying a feed-dog 37, adapted to engage with the feed-racks 38 and 39 on the carriage, as usual. At the left-hand  
 100 side of the machine is a ribbon-spool shaft 40, mounted in bearings 41 and provided with a crank and handle 42. Upon said shaft is splined a ribbon-spool 43, which is arranged within a frame or carrier 44, adapted to slide  
 105 longitudinally on said shaft and carry with it said ribbon-spool. At the right-hand side of the machine another ribbon-spool shaft 45 is mounted in bearings 46, and upon said shaft is splined a ribbon-spool 47 and arranged an-  
 110 other ribbon-spool frame or carrier 48.

At the base of the machine and near the rear end is arranged a transverse rock-shaft 49, which is provided at each end, exteriorly of the side frames of the machine, with a  
 115 rocker-arm 50, the upper end of which engages a ribbon-spool carrier 48. At the left-hand side of the machine the said rock-shaft is provided with a horizontal arm or extension 51, which projects rearwardly and beneath the  
 120 outer arm of a lever 52, pivoted horizontally at 53 in the frame-work. The inner arm of said lever rests upon a lug or projection 54, extending laterally from the spring-actuated driving rod or shaft 30.  
 125

At the left-hand side of the machine is a coiled spring 55, one end of which is attached to the frame-work and the other end to the left-hand rocker-arm 50. By this construction and arrangement the ribbon 56 is given  
 130 a transverse or lateral movement toward the front of the machine during the travel of the carriage to the left and a similar movement toward the rear of the machine during the



travel of the carriage to the right for the beginning of a new line.

At Figs. 1 and 2 the carriage is supposed to be at the extreme right and the ribbon-spools and ribbon at the end of their rearward movements.

If the machine be operated, the paper-carriage will be fed step by step toward the left of the machine under the influence of the driving-spring 31, rod 30, arm 32, and escapement devices, as usual. As the carriage travels in this direction, the lug or projection 54 moves slowly in the direction of the arrow at Fig. 1 and allows the inner arm of the lever 52 to descend, the outer arm of said lever to rise, through the upward movement of the arm 51, and the spring 55 to rock the shaft 49 and arms 50 and move the ribbon-spool carriers and ribbon-spools and ribbon toward the front of the machine. The movements of the parts are all so timed that when the carriage has traveled from right to left its whole distance the ribbon is moved laterally toward the front substantially its whole width, and by means of the spring 55, which is expanded when the carriage is moved to the right, and which retracts and exerts a pull when the carriage travels to the left, and the lug 54 moves down in the direction of the arrow. When the carriage is returned by hand to the right-hand side of the machine for the commencement of a new line, the lug or projection 54 is turned in the opposite direction and lifts the inner end of the lever 52 and throws down its outer end and causes it to depress the rearwardly-projecting horizontal arm of the rock-shaft, so as to vibrate the rocker-arm rearwardly against the tension of the spring 55 and cause the ribbon-spool carriers and ribbon-spools and ribbon to move toward the rear of the machine to the position illustrated at Figs. 1 and 2. During the return of the carriage from left to right the ribbon is moved lengthwise or partially wound from one spool onto another, preferably a distance about equal to the width of a type.

At the front end of the shaft 40 is secured a ratchet-wheel 57, adapted to be acted upon by a dog or tooth 58, having a slot 59 to provide for exact adjustment and attached by a screw 60 to a vertically-arranged rod 61, attached at its lower end by a screw 62 to a forwardly-projecting rocker-arm 63, fast on the rock-shaft 49. The upper end of said rod 61 preferably projects through an elongated hole in the top plate 2, and said rod is provided with a spring 64, attached to said top plate for the purpose of keeping the driving pawl or tooth 58 in engagement with the ratchet-wheel 57 when it may be desired to have said ratchet-wheel turn.

At 65 in the frame-work is pivoted a dog 66, having a depending extension 67 of sufficient weight to keep said dog in engagement with the ratchet-wheel 57 when such engagement may be desired.

At the right-hand side of the machine the

spool-shaft 45 is provided with a ratchet-wheel 68, adapted to be engaged by a driving pawl or tooth 69 similar in construction to the one at the other side of the machine and mounted on a vertically-arranged rod 70, attached at its lower end to a rocker-arm 71 on the rock-shaft 49. The upper end of said rod 70 is also preferably made to pass through an elongated hole in the top plate 2, and said rod is likewise provided with a spring 72, adapted to keep said pawl 69 in engagement with said ratchet-wheel 68, when desired. At 73 in the frame-work is pivoted a dog 74, adapted to engage with said ratchet-wheel 68 and provided with a depending extension 75 of greater weight than said dog, in order that the latter may stand normally in engagement with said ratchet-wheel.

Across the machine, just back of the keyboard and mounted to turn in bearings in the frame-work, is arranged a rock-shaft 76, which at one end is provided with a crank 77, and which near its left-hand end is provided with a finger 78 and near its right-hand end with a finger 79. The said fingers 78 and 79 are beveled or tapered at their ends in opposite directions to have a wedging effect, and said fingers are provided for the purpose of alternately disengaging the pawls and dogs of the ratchet-wheels when it may be desired to reverse the direction of the longitudinal travel of the inking-ribbon.

The operation of feeding the ribbon longitudinally is as follows: At Fig. 1 the driving-pawl is shown as in engagement with the ratchet-wheel 68. As the carriage moves step by step to the left the said pawl gradually descends on account of the downward movement of the rod 70 and rocker-arm 71; but said pawl is kept in contact with its ratchet-wheel by means of the spring 72. On the return of the carriage toward the right said pawl 69, through the rise of the rocker-arm 71 and rod 70, is elevated, and by reason of its engagement with the ratchet-wheel 68 operates to turn the ribbon-spool 47 in the direction of the arrow and wind a small portion of the ribbon upon said spool. During the descent of the pawl 69 the ribbon is not moved lengthwise and the spool 47 is held against backward rotation by reason of the engagement of the holding-dog 34 and ratchet-wheel 68. When the ribbon may have been thus wholly wound from the spool 43 onto the spool 47, the direction of the movement of the ribbon may be reversed by actuating the switching devices so that the ribbon may be again wound upon the spool 43. In order to effect this reversal of the ribbon, the shaft 76 is rocked to an extent such that the finger 79 may operate upon and move the rod 70 and extension 75 of the dog 74. In thus acting the said finger moves the rod 70, which is flexible, toward the left against the pressure of the spring 72 until the pawl 69 is carried out of the teeth of the ratchet-wheel 68, and the depending portion of the dog 74 is vi-



brated sufficiently to carry said dog down out of engagement with the teeth of said ratchet-wheel, all after the manner illustrated at the left-hand side of Fig. 1. By the same movement of said rock-shaft 76 the finger 78 is moved down and out of contact with the extension 67 and flexible rod 61, and as soon as this takes place the dog 66 rises to engagement with the ratchet-wheel 57, and the spring 64, acting on the rod 61, operates to throw the driving-pawl 58 into engagement with said ratchet-wheel, so that thereafter said pawl may turn said ratchet-wheel and rotate the spool 43 and wind the ribbon thereupon at each upward movement of said pawl effected by the rocker-arm 62 and rod 61 when the carriage is returned to the right. The switch or rock-shaft 76, with the fingers 78 and 79, is held in either of its two positions by a spring-detent 80, of an angular shape, to engage on either side of a pin 81 on said rock-shaft.

From the above it will be seen that the ribbon is moved crosswise toward the front of the machine as the carriage travels from right to left, and is moved crosswise toward the rear and simultaneously is fed lengthwise a short distance during the return of the carriage to the right for the beginning of a new line. By referring to Fig. 5 these movements of the ribbon will be found illustrated. The full or continuous lines represent the movements of the ribbon toward the front of the machine, while the oblique dotted or broken lines represent the movements of the ribbon lengthwise and crosswise on the return of the carriage to the right.

Referring to Fig. 6, it will be observed that the ratchet-wheel has its teeth cut in a direction opposite to that in which the teeth of the ratchet-wheel 68 are cut, so that the driving-pawl 69 may operate to turn the ratchet-wheel and the spool and wind the ribbon on its downward stroke, instead of its upward stroke, as shown in Fig. 1, and where the teeth of the wheel 68 are thus constructed the teeth of the ratchet-wheel 57 should be cut to correspond, or so cut that the said ratchet-wheel and spool may be turned on the downward movement of the pawl 58. If the ratchet-wheels of the machine be constructed or arranged so that the downward movements of the driving-pawls 58 and 59 effect the rotations of the said wheels, the ribbon will have movements such as represented at Fig. 7 of the drawings, the oblique full lines representing the movements of the ribbon during the printing operation or during the travel of the carriage from right to left, and the vertical broken lines representing the rearward transverse movements of the ribbon during the return of the carriage to the right. In this arrangement the ribbon is fed crosswise toward the front and also lengthwise a short distance while the printing is taking place, and is merely fed crosswise to-

ward the rear when the carriage is pulled back for the commencement of a new line.

By means of the cranks 42 the ribbon may be quickly wound by hand from one spool onto another when it may be desired to remove the ribbon or put on a new one or bring a ribbon of a different color into use.

The ribbon-carriers preferably extend up to about the level at which the ribbon travels horizontally across the machine, and adjacent to each ribbon-spool carrier is arranged a shield or support 82, consisting of a plate of sheet metal attached to the top plate or type-ring and bent to extend inwardly over the type-bar hangers of the machine, thus shielding them from contact by the ribbon and at the same time affording a desirable support and guide for the ribbon.

I do not claim herein combining with the paper-carriage and its driving power a ribbon, a pair of ribbon-spools, and a transverse rock-shaft connected to said spools and to the driving power, as such subject-matter is claimed in an application filed by me June 19, 1891, Serial No. 396,840.

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

1. In a type-writing machine, the combination, in a paper-carriage, of a rotatory paper-platen and a pressure-roller prolonged at its axis and provided with a hand-piece by which the roller may be rotated by hand independently of the platen and the paper adjusted in line-space direction.

2. In a type-writing machine, the combination, in a paper-carriage, of a paper-platen and a pressure-roller working against the same and constructed and arranged to have an endwise movement both to the right and to the left independent of the platen, so that the paper may be fed laterally or sidewise upon the platen.

3. In a type-writing machine, the combination, in a paper-carriage, of a paper-platen, a pressure-roller working against the same and constructed and arranged to have an endwise movement both to the right and the left, and brackets or supports for the shaft or axle of said pressure-roller arranged apart a distance greater than the length of said roller from end to end.

4. In a type-writing machine, the combination, in a paper-carriage, of a paper-platen, a pressure-roller working against the same and constructed and arranged to have an endwise movement both to the right and the left, having a prolonged shaft or axle provided with a finger-piece, and brackets or supports for said shaft or axle.

5. In a type-writing machine, the combination, in a paper-carriage, of a paper-platen, a pressure-roller, a pair of wedges, and a pair of arms for moving the roller away from the platen.

6. In a type-writing machine, the combination, in a paper-carriage, of a paper-platen, a



pressure-roller, brackets or supports for the shaft or axle of said pressure-roller, a wedge on said axle, and an arm on the carriage-frame.

7. In a type-writing machine, the combination, in a paper-carriage, of a paper-platen, a pressure-roller, brackets or supports for the shaft or axle of said pressure-roller, a pair of wedges on said axle, and a pair of arms on the carriage-frame, said wedges and arms being adapted to co-operate to force the roller away from the platen upon an endwise movement of said roller.

8. In a type-writing machine, the combination, in a paper-carriage, of a paper-platen, brackets or supports, a pressure-roller arranged between said brackets or supports and of a length less than the distance between said brackets, a pressure-roller shaft or axle mounted in said brackets and prolonged beyond the same at each end and provided with wedges, and an arm arranged at each end of the carriage-frame, adapted to co-operate with said wedges to move said roller away from the platen upon an endwise push or pull upon said axle.

9. In a type-writing machine, the combination of a ribbon, a ribbon-spool, a ribbon-spool carrier, a transverse rock-shaft, a vertical rocker-arm thereon connected to said carrier, a horizontally-arranged rocker-arm, also on said rock-shaft, a driving-power, and a transverse lever arranged between the driving power and the horizontally-arranged rocker-arm and connected to the driving-power in a manner to communicate motion therefrom through the rock-shaft and rocker-arm to the ribbon-spool carrier and the ribbon.

10. In a type-writing machine, the combination of a ribbon, a ribbon-spool, a ribbon-spool carrier, a transverse rock-shaft, a vertically-arranged rocker-arm on said shaft, a horizontally-arranged rocker-arm, also on said shaft, a driving-power, a lug or projection carried thereby, and a horizontally-arranged lever between said lug or projection and the horizontally-arranged rocker-arm.

11. In a type-writing machine, the combination of a ribbon, a ribbon-spool, a ribbon-spool carrier, a rock-shaft, a vertical rocker-arm, a horizontal rocker-arm, a horizontally-arranged lever, and a spring-actuated driving shaft or axis provided with a lug or projection adapted to act upon said lever.

12. In a type-writing machine, the combination, with a paper-carriage, of a driving-arm connected thereto, a spring-actuated driving-shaft, a lever connected thereto at one end, a rock-shaft having a horizontally-arranged rocker-arm connected to the other end of said lever and having a vertical rocker-arm, a ribbon-spool carrier connected to said vertical rocker-arm, a ribbon-spool, and a ribbon.

13. In a type-writing machine, the combination of a ribbon, a ribbon-spool, a ribbon-spool carrier, a vertical rocker-arm, a rock-shaft, a horizontally-arranged rocker-arm on said shaft, a driving-power, a lever connected

thereto at one end and at the other end to the horizontally-arranged rocker-arm, all for moving the ribbon transversely in one direction, and a spring for moving the ribbon transversely in the opposite direction.

14. In a type-writing machine, the combination of a ribbon, a ribbon-spool, a ribbon-spool carrier, a vertical rocker-arm, a rock-shaft, a horizontally-arranged rocker-arm, a spring-actuated driving-shaft, a lever connected to said shaft and to said horizontally-arranged rocker-arm, a driving-arm, a paper-carriage, and a returning-spring.

15. In a type-writing machine as a means for moving the ribbon crosswise in one direction, the combination, with a ribbon, of a ribbon-spool, a ribbon-spool carrier, a rock-shaft having a vertical rocker-arm and a horizontal rocker-arm, and a lever connected at one end to the latter and at the other end to the driving-power of the machine.

16. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, a pair of ribbon-spool carriers, a rock-shaft extending across the machine and having at each end a vertical rocker-arm, a horizontal rocker-arm on said shaft, a driving-power, and a lever connected to the latter at one end and to the horizontal rocker-arm at its other end.

17. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, a pair of ribbon-spool carriers, a rock-shaft extending across the machine and having at each end a vertical rocker-arm, a horizontal rocker-arm on said shaft, a driving-power, a lever connected to the latter at one end and to the horizontal rocker-arm at its other end, and a returning-spring.

18. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, a pair of ribbon-spool carriers, a rock-shaft extending across the machine, a vertical rocker-arm at each end of said rock-shaft, a horizontal rocker-arm on said rock-shaft, a transverse lever connected thereto at one end, a driving-power connected to said lever at its other end, a paper-carriage, and a connection between said paper-carriage and the driving-power, whereby the ribbon may be moved widthwise rearwardly on the return of the carriage at the beginning of a new line.

19. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, a pair of ribbon-spool carriers, a rock-shaft extending across the machine, a vertical rocker-arm at each end of said rock-shaft, a horizontal rocker-arm on said rock-shaft, a transverse lever connected thereto at one end, a driving-power connected to said lever at its other end, a paper-carriage, a connection between said paper-carriage and the driving-power, whereby the ribbon may be moved widthwise rearwardly on the return of the carriage at the beginning of a new line, and a spring for moving the ribbon widthwise toward the front of the machine during the travel of the carriage toward the left during the time of writing.



20. In a type-writing machine, the combination of a spring-actuated driving shaft or axis, a rock-shaft arranged at right angles thereto and having a horizontally-arranged rocker-arm, a lever connection between said driving shaft or axis and said rocker-arm, a vertically-arranged rocker-arm on said rock-shaft, a ribbon-spool connected thereto, and a ribbon.

21. In a type-writing machine, the combination of a ribbon, a ribbon-spool provided with a ratchet-wheel, a rock-shaft, means for rocking said shaft connected with the driving-power of the machine, a rocker-arm on said shaft, and a vertically-arranged rod connected to said rocker-arm and provided with a pawl adapted to turn said ratchet-wheel and spool.

22. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, each having a ratchet-wheel, a rock-shaft extending across the machine and connected with the carriage-driving power, a rocker-arm near each end of said rock-shaft, and a vertically-arranged rod carrying a driving-pawl connected to each of said rocker-arms.

23. In a type-writing machine, the combination of a ribbon, a ribbon-spool having a ratchet-wheel, a rocker-arm, a vertically-arranged rod connected thereto and having a driving-pawl, a spring, and a rocking wedging-finger adapted to remove said pawl from said ratchet-wheel.

24. In a type-writing machine, the combination of a ribbon, a ribbon-spool having a ratchet-wheel, a rocker arm, a vertically-arranged rod connected thereto and having a driving-pawl, a spring, a dog for said ratchet-wheel having a depending extension, and a rocking wedging-finger adapted to simultaneously remove said dog and said pawl from engagement with said ratchet-wheel.

25. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, each having a ratchet-wheel, a rock-shaft extending across the machine, a rocker-arm near each end of said rock-shaft, a vertically-arranged rod connected to each of said rocker-arms and carrying each a driving-pawl, a spring for each of said rods, a dog for each of said ratchet-wheels, and a transverse rock-

shaft having a pair of vibratory fingers adapted to alternately remove the dog and pawl provided at each of said ratchet-wheels.

26. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, each provided with a ratchet-wheel, a pair of ribbon-spool carriers, a transverse rock-shaft provided at each end with a vertical rocker-arm, a horizontal rocker-arm on said rock-shaft, a spring-actuated driving-shaft, a lever connected thereto and to said horizontally-arranged rocker-arm, a driving-arm also connected to said spring-actuated driving-shaft, a paper-carriage, a rocker-arm near each end of said rock-shaft, a vertical rod connected to each of said rocker-arms and carrying a driving-pawl, whereby the ribbon may be fed both longitudinally and transversely.

27. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, each provided with a ratchet-wheel, a pair of ribbon-spool carriers, a transverse rock-shaft provided at each end with a vertical rocker-arm, a horizontal rocker-arm on said rock-shaft, a spring-actuated driving-shaft, a lever connected thereto and to said horizontally-arranged rocker-arm, a driving-arm also connected to said spring-actuated driving-shaft, a paper-carriage, a rocker-arm near each end of said rock-shaft, a vertical rod connected to each of said rocker-arms and carrying a driving-pawl, a spring for each of said rods, a dog for each of said ratchet-wheels, and a rock-shaft provided near each end with a finger adapted to move one pawl and its companion dog from engagement with their ratchet-wheel in one direction of movement of said shaft and to move the other pawl and its companion dog from engagement with their ratchet-wheel in the opposite direction of movement of said shaft.

Signed at New York city, in the county of New York and State of New York, this 28th day of August, A. D. 1891.

W. J. BARRON.

Witnesses:

JACOB FELBEL,  
MARTIN COHEN.