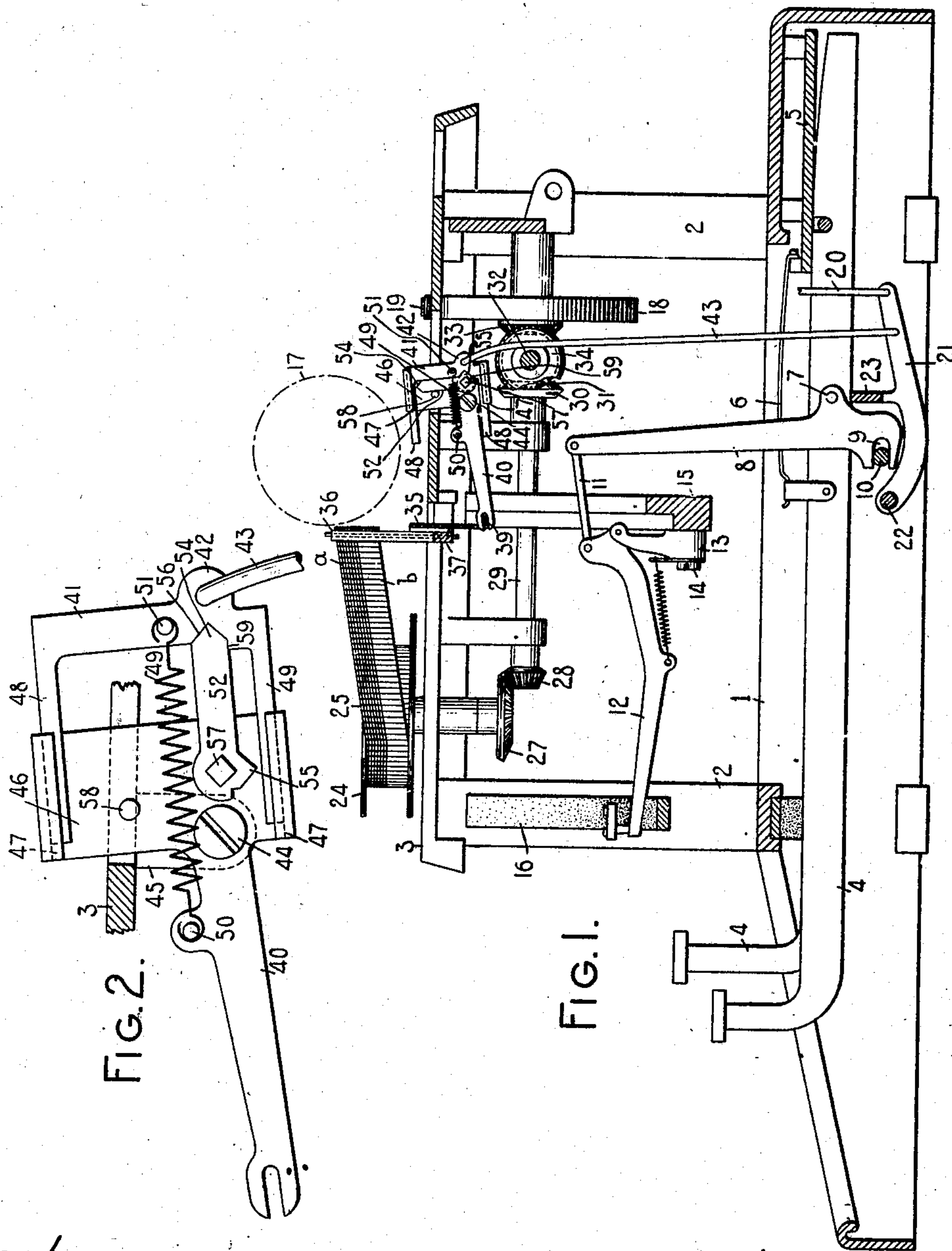


M. W. POOL.
TYPE WRITING MACHINE.
APPLICATION FILED NOV. 26, 1906.

911,908.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

E. M. Wells.
J. B. Reeves.

INVENTOR:

Morris W. Pool

By Jacob Felbel

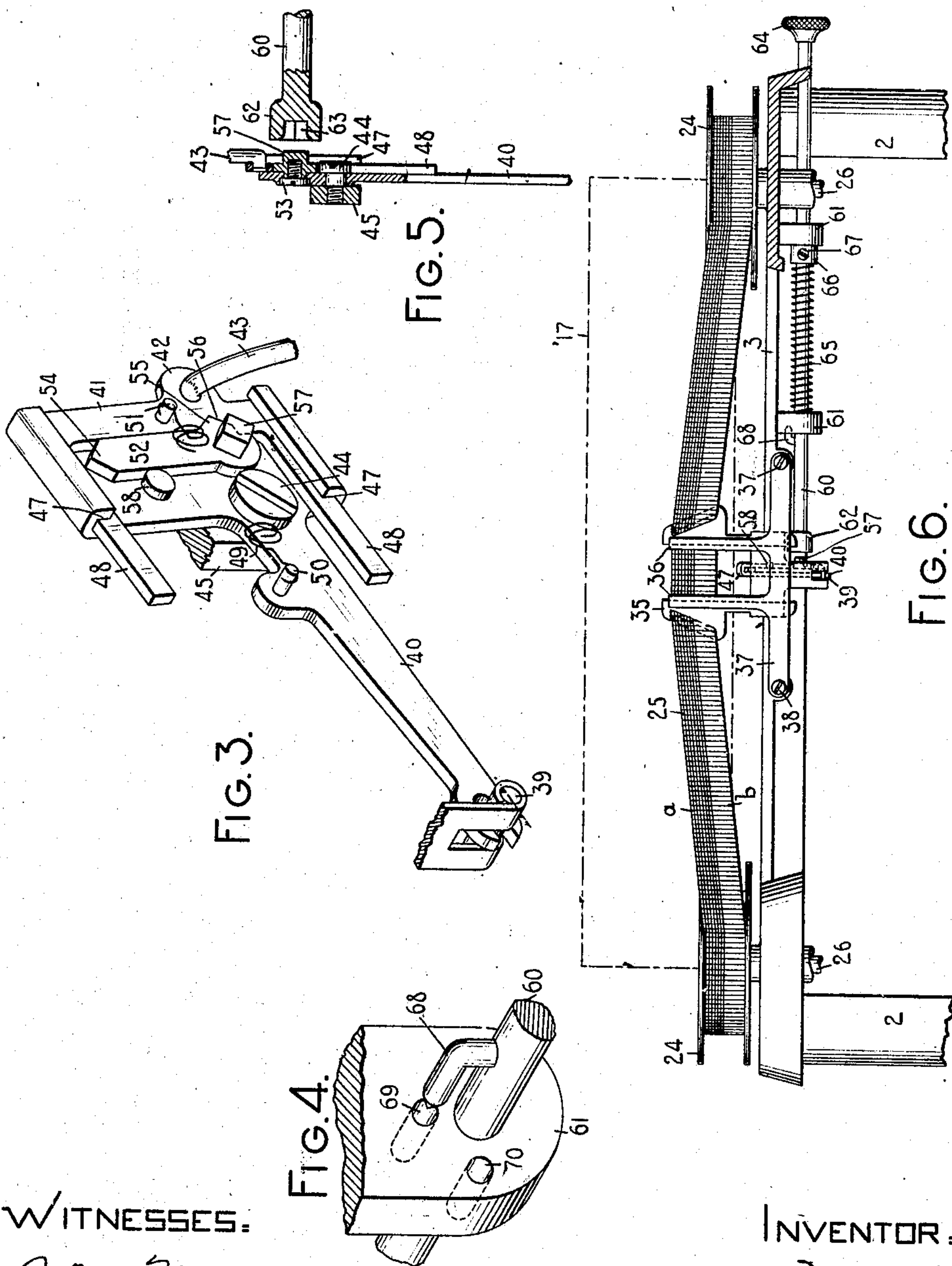
HIS ATTORNEY

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UNITED STATES PATENT OFFICE.

MORRIS W. POOL, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 911,908.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed November 26, 1906. Serial No. 345,079.

To all whom it may concern:

Be it known that I, MORRIS W. POOL, citizen of the United States, and resident of the borough of Brooklyn, city of New York, 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 to ribbon mechanism for writing machines and has for its object to provide improved means for varying the widthwise portion of the ribbon which is exposed to the types.

To the above and other ends, the invention consists in the features of construction, combinations of devices and arrangements of parts, hereinafter described and particularly pointed out in the claims.

The invention is shown as applied to a Monarch typewriting machine, but it is to be understood that it may be adapted to other forms of writing machines.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of a typewriting machine embodying my invention, parts of the machine being omitted. Fig. 2 is an enlarged side view of a device hereinafter termed a two-part ribbon operating lever. Fig. 3 is an enlarged fragmentary perspective view showing the two-part ribbon operating lever. Fig. 4 is an enlarged fragmentary perspective view of a part of the adjusting means for said operating lever and of a bearing of the adjusting means. Fig. 5 is a plan view, partly in horizontal section, of the two-part operating lever, said view also showing a part of the means for adjusting said lever and part of the means for actuating said lever. Fig. 6 is a fragmentary front view of the upper part of the machine embodying my invention, parts of the machine being shown in section and parts being omitted and broken away.

In the drawings the main frame of the machine is shown as comprising a base 1, corner posts 2 and a top plate 3. Key levers 4 are fulcrumed on a fulcrum plate 5 in the rear of the base, each key lever being provided with a restoring spring 6 and having pivoted to it at 7 a sub-lever 8. The sub-lever is slotted at 9 below its pivot to cooperate with a fixed abutment 10 and the upper end of said sub-lever is connected by a link 11 with a type bar 12, said type bar

being pivoted in a hanger 13 secured by a screw 14 to a segmental type bar support 15.

The hangers are arranged on the support 15 in segmental series and the free ends of the type bars are normally supported on a segmental type rest 16, said type bars when actuated cooperating with the front face of a rotary platen 17 which is diagrammatically illustrated. The platen is mounted in a platen carrier or carriage (not shown), the latter being mounted on fixed track-ways and being adapted to be drawn leftward over the top plate by a spring drum 18 which is connected with said carriage by a band or strap 19. The leftward movement of the carriage is controlled by the usual escapement or letter space feeding devices, which devices comprise a pivoted dog carrier (not shown), said dog carrier being connected by a link 20 with the central arm 21 of a universal bar frame which also comprises a rock shaft 22 and a universal bar proper 23, the latter extending from side to side of the machine beneath the key levers and when actuated by the latter causing the letter space feeding devices to cooperate in the usual way to permit letter space feeding movements of the carriage and platen.

Ribbon spools 24 are arranged horizontally above the top plate, one at each side of the machine and forwardly of the platen. A ribbon 25 is wound on said ribbon spools and passes from one to the other of them in front of the platen. The ribbon shown in the drawings is what is commonly termed a polychrome or bi-color ribbon, being divided longitudinally into stripes *a* and *b* having different characteristics, such as being differently colored. The usual longitudinal feeding mechanism of the Monarch machine for winding the ribbon back and forth between the spools is shown in the drawings, but any other suitable ribbon feeding mechanism may be employed. As shown, each ribbon spool is mounted at the top of a vertical shaft 26 which has fixed to its lower end a small beveled gear 27, the latter meshing with a beveled pinion 28 at the forward end of a horizontal shaft 29, said shaft carrying at its rear end a beveled pinion 30. Cooperative with said pinion is a driving pinion 31 fixed to a horizontal driving shaft 32, said driving shaft being capable of endwise movement to connect either one of the driving pinions 31 which it carries with their

associate pinions 30 so as to actuate one or another of the gear trains above described. The driving shaft 32 receives rotary motion from the spring drum, when the latter is turned in one direction, through the usual connections, said connections comprising the usual beveled pinions 33 and 34, the former connected with the spring drum and the latter with the driving shaft.

Midway between the ribbon spools the ribbon is threaded through a vibratory ribbon carrier or vibrator which is or may be of the style employed on some Monarch machines and is designated in the drawings by the numeral 35. The vibrator 35 is mounted to slide on the vertical arms 36 of a supporting bracket 37 which is secured by screws 38 to the top plate. The stem of the vibrator is slotted and carries a cross-pin 39 which, as shown in Figs. 1, 3 and 6, coöperates with the slotted forward end of a lever arm 40, the latter being connected or combined in a manner presently to be described at length with another lever arm 41 to form a two-part operating lever. The lever arm 41 has a rearwardly projecting perforated ear 42 which receives the upper end of an actuating link 43, the lower end of the latter being pivotally connected with the lever arm 21 of the universal bar frame at a fixed distance from the pivotal axis of the latter, which pivotal axis is coincident with the longitudinal axis of the rock shaft 22.

The two parts 40 and 41 of the operating lever are made adjustable one upon the other in the direction of the length of said lever so that while the fulcrum point of the lever and the points of connection of said lever with other devices between the ribbon and the printing keys may remain unchanged, yet the length of the two-part lever may be varied so as to vary the distance between said unchanging points. Of course, this idea of a two-part extensible member adjustable to vary its length to alter the widthwise portion of the ribbon to be used may be carried out in various ways. As shown in the drawings, the extensible member is the operating lever for the vibrator, said lever having two relatively adjustable arms. As shown especially in Figs. 2 and 3, the forward lever arm 40 is pivoted on a headed screw 44 which is secured in a lug 45 depending from the under side of the top plate. The rear portion of the lever arm 40 is broadened out into a plate-like part 46 so that said lever arm 40 somewhat resembles a T in shape. The end portions of the part 46 are bent over to form grooved guideways 47 which receive and guide parallel arms 48 projecting forwardly from the ends of the body portion of the rear lever arm 41. The latter, considered as a whole, resembles somewhat a capital U in shape. The lever arm 41 is slidable back and forth in the

grooved guideways on the lever arm 40 and is constantly urged forward towards the fulcrum or screw 44 by a coiled spring 49, one end of which is secured to a lateral pin 50 on the lever arm 40, the other end of said spring being secured to a lateral pin 51 on the lever arm 41. The lever arms are adapted to be set in one or another of two predetermined relations, the means for accomplishing this result comprising an interposed member or arm 52 which is pivotally connected by a headed screw 53 with the lever arm 40, the screw as shown in Fig. 5 bearing in the arm 40 and serving as a sort of headed lateral bearing lug for the member 52. The interposed member 52 is provided with two pointed engaging portions 54 and 55 arranged at unequal distances from the center of rotation of said member 52, each of said engaging portions being adapted to coöperate with a V-shaped notch or opening 56 in the lever arm 41. The member 52 is adapted to be rotated at will and for this purpose is provided with a laterally projecting squared lug 57 which is co-operative with hand adjusting means presently to be described. When the end 55 of the member 52 is operatively engaged with the notch 56, the side of the member 52 coöperates with a stop 58 on the part 46 of the forward lever arm, as shown in Figs. 1 and 3. When the member 52 is turned to the position shown in Fig. 2, a projection 59 at the lower side of the notch 56 serves as a stop to arrest further turning movement of the member 52. The turning movements of the member 52 are effected by any suitable hand operated device, the one shown in the drawings comprising a spring-pressed key rod 60, mounted in lugs 61 depending from the under side of the top plate, and at its inner end is formed with a head 62 which is provided with a squared depression 63 adapted to coöperate with the squared lug 57 on the member 52. The outer end of the key rod extends through and beyond the right-hand side of the top plate and is provided with a finger button 64. Between the lugs 61 the key rod is surrounded by a coiled spring 65, one end of which abuts the left-hand lug 61 and the other end of which abuts a collar 66 fixed to the rod by a screw 67 and normally maintained against the right-hand lug 61 by the spring 65. The key rod is the invention of Jacob Felbel and is not claimed *per se* by me. In the normal position it will be observed the inner end of the key rod is entirely separated from the squared lug or stud 57 so that actuating movements of the two-part operating lever are not interfered with. An angled pin 68 having a pointed or sharpened end is fixed on the key rod 60 and is adapted to coöperate with openings 69 and 70 (Fig. 4) formed in the inner side face of the left-

hand lug 61 and thereby to maintain the key rod in either of the positions to which it may be turned to adjust the member 52 and set the two parts of the operating lever.

5 The latter is so proportioned that when its two parts are arranged or set as shown in Figs. 1 and 3, the lever will operate when actuated by the link 43 to raise or throw the vibrator 35 far enough to present the
10 lower field *b* of the ribbon to the types, and this field will be used as long as the parts of the operating lever are so arranged.

When it is desired to employ the upper field *a*, the finger button 64 is pressed in-
15 wardly to overcome the spring 65 and cause the squared opening 63 to engage with the squared lug 57. When this engagement is complete the positioning pin 68 will have been entirely withdrawn from the opening
20 69 so that the key rod is free to be turned on its axis rearwardly. A forward turning of said key rod, it will be understood, will be prevented at this time by the stop 58. As the key rod is turned rearwardly, the member 52 will be rotated rearwardly on its axis, the rear side of said member acting on the forward side of the vertically disposed body portion of the lever arm 41, forcing said
30 lever arm rearwardly against the pull of the spring 49 and moving the point at which the actuating link 43 engages further from the fulcrum 44 of the operating lever. The rearward turning of the member 52 and the consequent relative movement between the
35 two parts of the operating lever will continue until the engaging end 54 is seated in the notch 56 and the lower side of the member 52 is stopped by the projection or stop 59. If now the key rod be released, it will be
40 restored to normal position by the spring 65 and the pin 68 will during the restoring movement engage with the hole or opening 70 in the lug 61. It will be understood that by means of the pin 68 and the holes 69 and
45 70 the key rod is prevented, when in normal or disengaged position, from being accidentally turned on its axis. With the parts of the operating lever set as shown in Fig. 2, said operating lever when actuated by the
50 link 43 will raise or throw the vibrator to a less extent than before, this being so because while the extent of movement of the actuating link 43 is the same and its point of engagement with the lever arm 41 is the same, yet the shifting of the lever arm 41 has
55 lengthened or increased the power arm of the operating lever so that the pull of the link 43 is at a greater distance from the fulcrum of said lever. The parts are so proportioned that this pull of the lever will
60 raise the vibrator only far enough to present the upper field *a* of the ribbon to the types, so that the type impressions will follow a straight path longitudinal of said upper
65 field *a*. When it is again desired to make

use of the lower field *b* of the ribbon the key rod 60 is pressed in to engage with the square stud 57 and while so engaged is turned forwardly to rotate the interposed member 52 forwardly until it reaches the position shown in Figs. 1 and 3. During this
70 movement it will be understood the spring 49 will draw the two parts of the operating lever together and will press the member 52 against the stop 58.

It will be seen that by my invention I provide a two-part operating lever or extensible member and means for varying a dimension of said member at will to change
75 the widthwise portion of the ribbon presented to the types; that said extensible member is included in a train of devices for actuating the ribbon vibrator; that said member has two positive and unvarying pivotal points, namely, at the fulcrum screw 44
80 and at the point where the link 43 engages the ear 42 on the rear arm 41; that by effecting at will a relative movement between the two parts of the extensible member or lever the pivotal points are brought closer to or
90 moved further from each other to vary the throw or extent of movement of the vibrator from a single normal position so as to vary the widthwise portion of the ribbon presented to the types; and that by this means
95 the two-part operating lever is varied in length at will, the increase or decrease being in the power arm of said lever, the load arm or the distance between the fulcrum and the vibrator remaining unchanged.

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

1. In a ribbon mechanism for writing machines, the combination of an extensible member operative to move the ribbon at
105 printing operation and to control the throw thereof; and means for varying a dimension of said member predetermined extents to change at will the widthwise portion of the ribbon presented to the types.

2. In a ribbon mechanism for writing machines, the combination of an extensible member for operating the ribbon and controlling the extent of its throw; and hand
110 operated adjusting mechanism for varying a dimension of said member predetermined extents at will to change the widthwise portion of the ribbon presented to the types.

3. In a typewriting machine, the combination of a ribbon vibrator; a train of actuating devices for said vibrator, said devices including a member which controls the extent of throw of the ribbon, said member
120 having two positive unvarying pivotal points of connections, and means for varying the distance between said pivotal points predetermined extents at will to change the widthwise portion of the ribbon presented to the types.

4. In a typewriting machine, the combina- 130

tion of a ribbon vibrator; a train of actuating devices for said vibrator, said devices including a two-part member which controls the extent of throw of the ribbon, each part
5 having an unvarying pivotal connection; and means for effecting at will predetermined extents of relative movement between the two parts of said member to vary the widthwise portion of the ribbon presented to
10 the types.

5. In a typewriting machine, the combination of a ribbon vibrator; a two-part operating lever therefor; and means for adjusting the two parts of said lever in one or
15 another of a plurality of predetermined relations to vary the length of said lever predetermined extents at will to alter the widthwise portion of the ribbon presented to the types, the points of connection of said lever
20 remaining always the same.

6. In a typewriting machine, the combination of a ribbon vibrator having a single normal position; a two-part operating lever; and means for setting the two parts of said
25 operating lever in one or another of a plurality of predetermined relations so as to vary the length of said lever predetermined extents at will to vary the extent of throw of the vibrator and thus alter the widthwise
30 portion of the ribbon presented to the types, the points of connection of the lever remaining always the same.

7. In a typewriting machine, the combination of a ribbon vibrator; a two-part operating member; means constantly tending to
35 force said parts into a certain relation; an interposed member between said parts; and means for adjusting said interposed member in one or another of a plurality of predetermined positions to set the two parts of
40 said operating member in one or another of a plurality of predetermined relations.

8. In a typewriting machine, the combination of a ribbon vibrator; a two-part operating lever, one part being slidable on the
45 other; a spring constantly tending to draw the parts together; an interposed member; and means for adjusting said interposed member at will to vary the relations between
50 the two parts.

9. In a typewriting machine, the combination of a ribbon vibrator; a two-part operating lever having a fixed fulcrum; an actuating link having a single point of connection

with said operating lever; and means 55 for lengthening or shortening the power arm of said lever so as to move said link further from or nearer to the fulcrum of said lever and thereby vary the throw of the ribbon vibrator. 60

10. In a typewriting machine, the combination of a ribbon vibrator; a two-part lever for operating the same, one lever part being slidable on the other; a spring having
65 a connection with each part; an interposed member pivoted to one lever part and engaging the other lever part to hold it against the spring; and a hand device for setting or adjusting the interposed member.

11. In a typewriting machine, the combination of a ribbon vibrator, and key actuated means for actuating the vibrator, said
70 actuating means comprising a two-part member, and means that extend outside of the machine for setting the parts of said member in predetermined relations and increasing or decreasing the length of said
75 two-part member predetermined extents.

12. In a ribbon mechanism for writing machines, the combination of a lever member operative to move the ribbon at printing
80 operation, means for varying a dimension of said lever member predetermined extents to change at will the widthwise portion of the ribbon presented to the types, and
85 means for actuating said lever member having an unvarying point of connection with said lever member.

13. In a typewriting machine, the combination of a ribbon vibrator, a train of
90 actuating devices for said vibrator, said devices including a two-part lever member, each part of said member having an unvarying pivotal connection with other elements, and means for effecting at will predetermined
95 extents of relative movement between the two parts of said lever member to vary the widthwise portion of the ribbon presented to the types.

Signed at the borough of Manhattan, city 100 of New York, in the county of New York and State of New York, this 23d day of Nov. A. D. 1906.

MORRIS W. POOL.

Witnesses:

E. M. WELLS,
J. B. DEEVES.