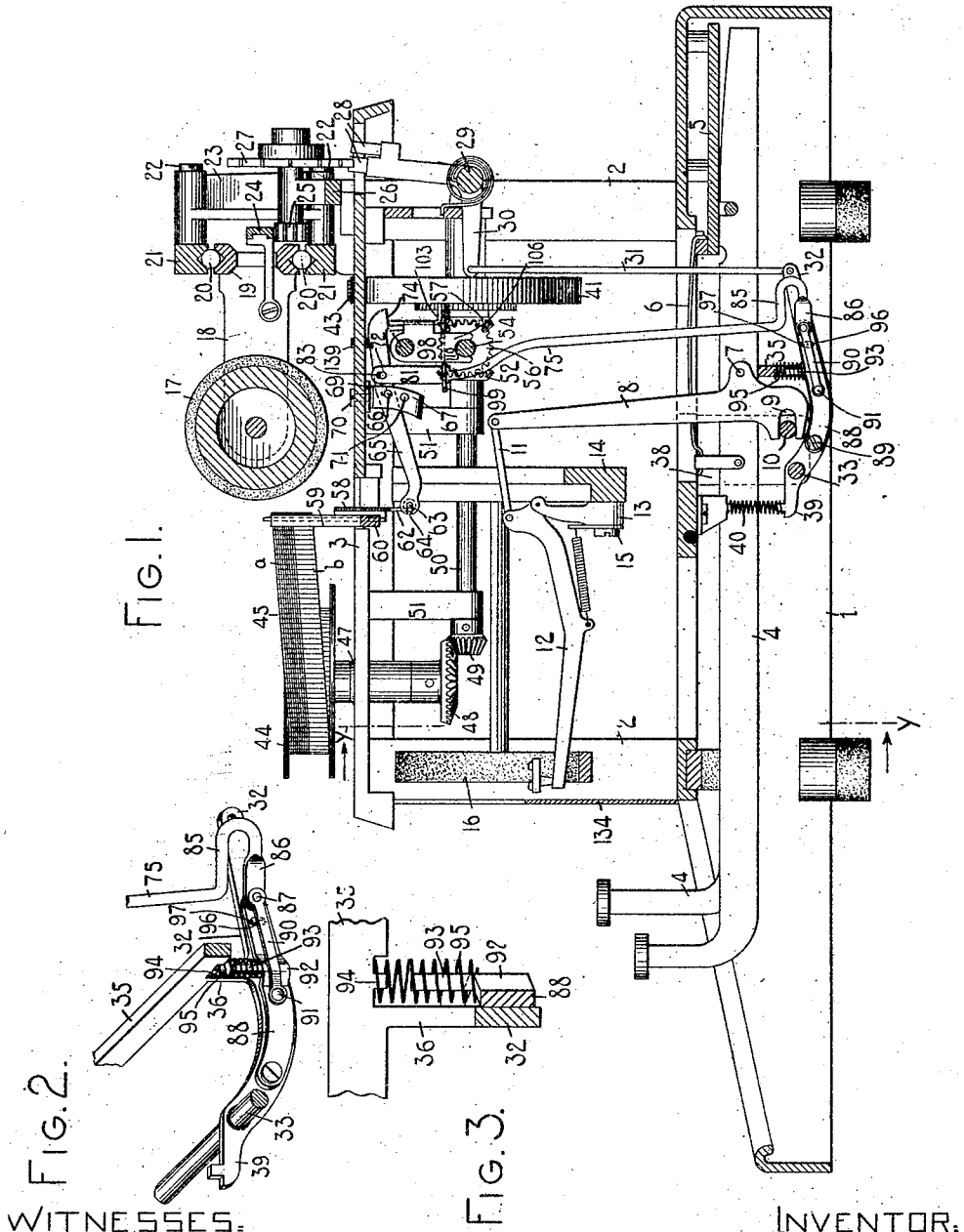


E. E. BARNEY.
TYPE WRITING MACHINE.
APPLICATION FILED JULY 6, 1906.

1,007,840.

Patented Nov. 7, 1911.

4 SHEETS—SHEET 1.



WITNESSES:

M. J. Hannacher
M. W. Pool

INVENTOR:

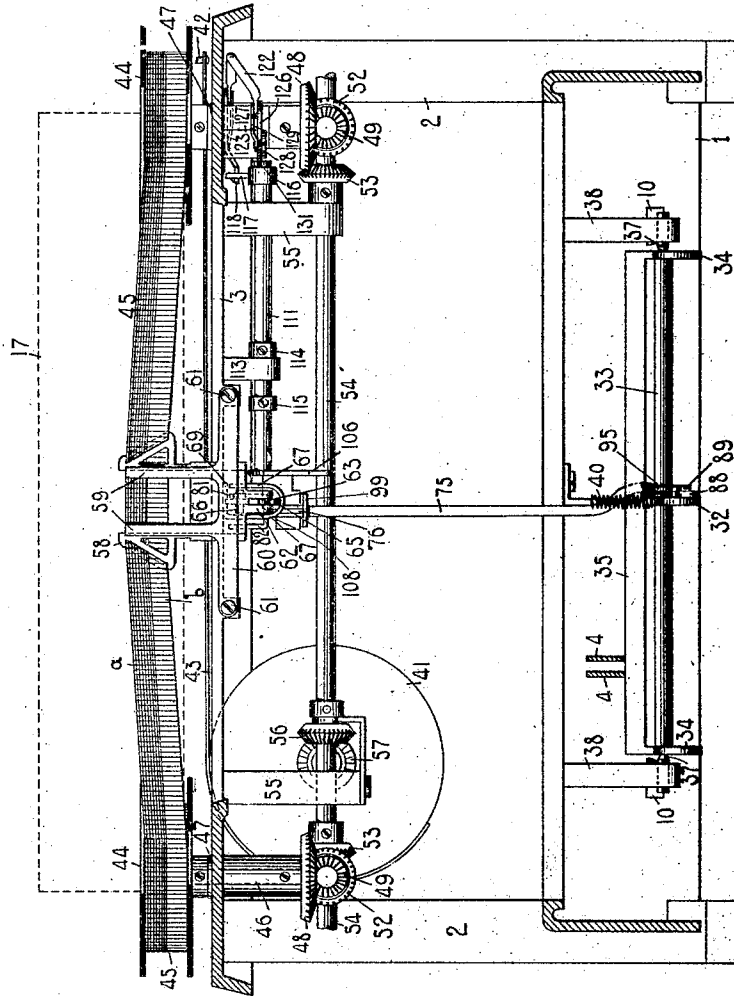
Edwin E. Barney
By Jacob Felber
HIS ATTORNEY

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4 SHEETS—SHEET 2.

FIG. 4.



WITNESSES:

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4 SHEETS—SHEET 3.

FIG. 5.

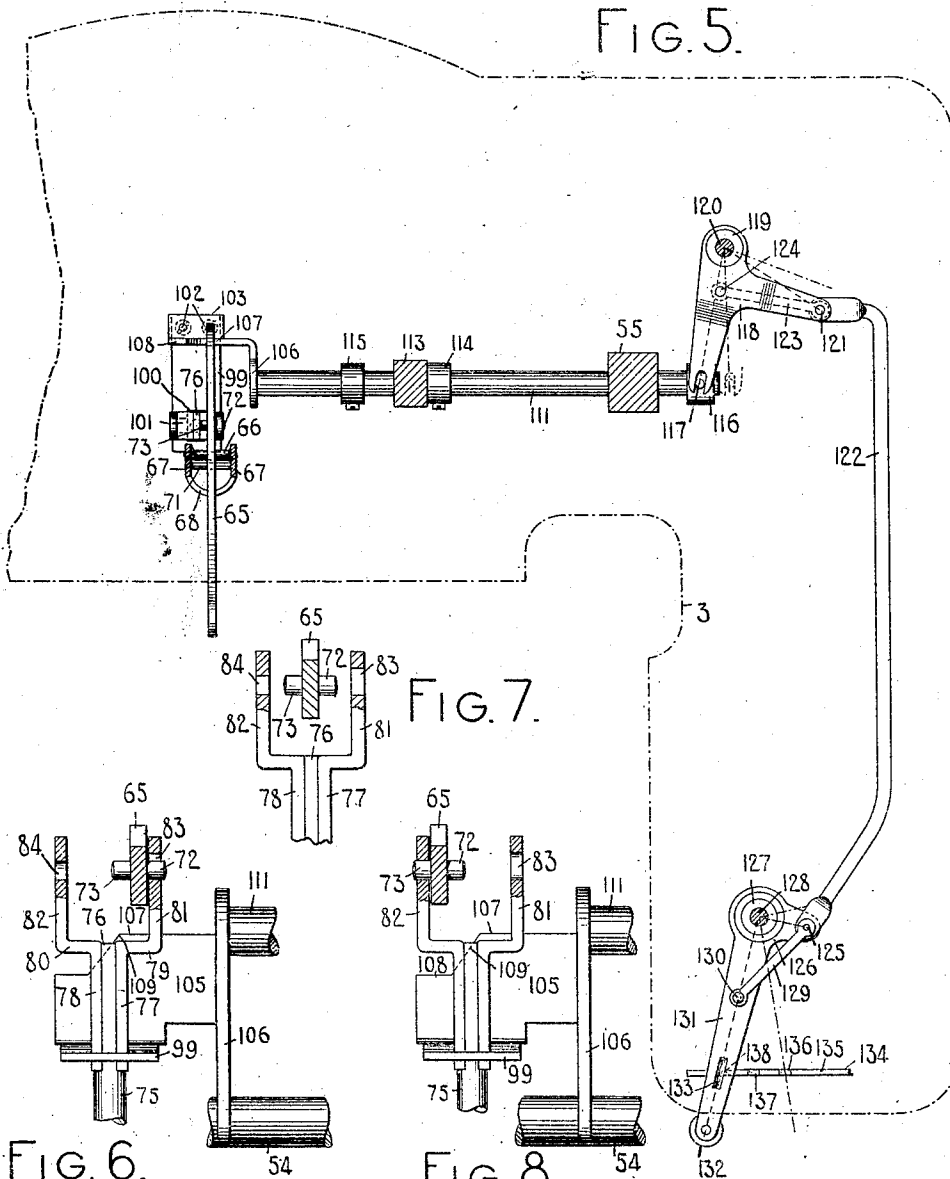


FIG. 6.

FIG. 8.

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4 SHEETS—SHEET 4.

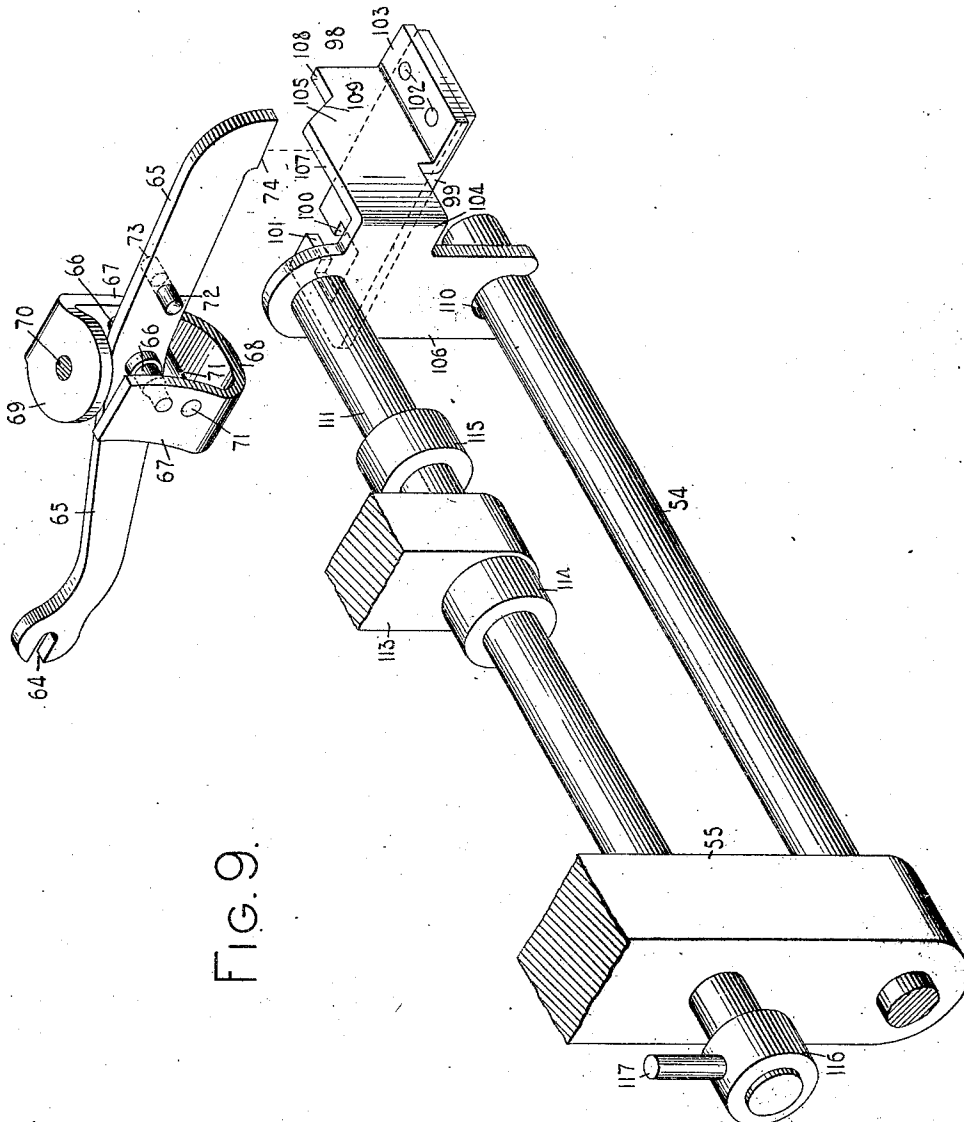


FIG. 9.

WITNESSES.

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UNITED STATES PATENT OFFICE.

EDWIN E. BARNEY, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,007,840.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed July 6, 1906. Serial No. 324,956.

To all whom it may concern:

Be it known that I, EDWIN E. BARNEY, citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 more especially to the ribbon mechanism of typewriting machines, and has for its main object to provide an improved construction wherein a ribbon normally removed from the printing point and having a plurality of fields of different characteristics may, under the influence of the printing keys, be moved to cover the printing point with any desired field.

Further objects will subsequently appear.

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

The invention is illustrated as embodied in a Monarch visible typewriter, but the nature of the invention is such that it may be applied in whole or in part to other forms of writing machines.

In carrying out my invention in the present instance I have provided the usual vibrator-operating lever found in the Monarch typewriter with oppositely disposed projections or studs. A connecting member or link pivotally and yieldingly connected at its lower end to the universal bar frame is forked at its upper end to embrace the operating lever, said link being shiftable to bring either of its forks into engagement with the neighboring stud on the operating lever, one fork effecting a close connection between the link and lever and the other effecting a loose or lost-motion connection between the two, the result being that different extents of movement of the lever may be effected. Associated with the link shifting or switching means I employ stops which are movable into the path of the operating lever to cause a positive arrest of said lever at different predetermined points in its path of movement.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of a typewriting machine embodying my invention, parts of the machine being omit-

ted. Fig. 2 is a full-sized perspective view showing the connection between the universal bar frame and the actuating link. Fig. 3 is an enlarged fragmentary detail view taken on a plane represented by the line x in Fig. 1 and looking in the direction of the arrow at said line. Fig. 4 is a vertical transverse sectional view taken on a plane represented by the line $y-y$ in Fig. 1 and looking in the direction of the arrows at said line, parts being omitted. Fig. 5 is a full-sized fragmentary horizontal sectional view taken just beneath the top plate and showing parts of the ribbon mechanism, the top plate being indicated by dotted lines. Figs. 6, 7 and 8 are enlarged detail front views, partly in section and showing parts of the ribbon mechanism in varying relations. Fig. 9 is an enlarged perspective view of parts of the ribbon mechanism, as viewed from the rear at the right of the machine.

Referring more especially to Figs. 1 and 4 of the drawings, 1 is the base of the machine supporting corner posts 2 which sustain a top plate 3. Key levers 4 are fulcrumed on a fulcrum plate 5, each key lever being provided with a restoring spring 6 and having pivoted to it at 7 a sub-lever 8 the lower portion whereof is slotted at 9 to cooperate with a fixed abutment 10 and the upper end whereof is connected by a link 11 with a type bar 12. Each type bar is pivotally mounted in a hanger 13 which is one of a series segmentally arranged and secured to a segmental type bar support 14, each by a headed screw 15. The type bars are normally supported at their free ends by a segmental type rest 16, and are adapted to cooperate with the front face of a rotary platen 17 mounted in a platen frame or carriage comprising side bars 18 and a connecting rear bar 19, said rear bar being formed with oppositely disposed longitudinal grooves which receive anti-friction balls 20. Grooved track-ways 21 also cooperate with said anti-friction balls, said track-ways being fixedly secured by screws 22 to standards 23 rising from the top plate. A carriage feed rack 24 is mounted in the platen frame or carriage and normally operates with a feed pinion 25 mounted on a bracket 26.

Operatively connected with the pinion 25

is an escapement wheel 27 cooperative with which are escapement dogs 28, said dogs being mounted at the top of a vibratory dog carrier or rocker 29 having a horizontally disposed arm 30 which is connected by a link 31 with a central rearwardly projecting and horizontally disposed arm 32 of a universal bar frame. The universal bar frame comprises also a rock shaft 33, side arms 34 and a universal bar proper 35, which latter extends from side to side of the machine beneath the series of key levers and is connected with the central arm 32 by an arm 36 (Figs. 2 and 3) projecting upwardly from the arm 32. The ends of the rock shaft 33 cooperate with adjustable pivots 37 supported in bearing plates 38 depending from the top of the base 1 near the sides thereof, said plates also supporting the fixed abutment 10. The central arm 32 has a portion 39 projecting forwardly and horizontally from the rock shaft 33 and cooperating with a coiled restoring spring 40. The key levers, and the spacing levers (not shown), operate, when depressed, to actuate the universal bar, swinging the latter downward about the pivots 37 and causing the escapement devices to cooperate in a known manner to permit the carriage to be drawn a letter space at a time leftward across the top plate by a spring drum 41 with which a pin or stud 42, depending from said carriage, is connected by a band or strap 43.

Ribbon spools 44 are arranged above the top plate 3, one at each side of the machine and forwardly of the platen, and receive a ribbon 45 which, as herein shown (Figs. 1 and 4), is divided longitudinally into stripes or fields *a* and *b* of different characteristics; for example, the field *a* may be of one color such as black and the field *b* of a different color as red, or the field *a* may be copying ribbon and the field *b* record ribbon. The ribbon 45 may be fed longitudinally or wound from either spool to the other by any suitable means, that illustrated in the drawings having the general characteristics of the ribbon winding or feeding mechanism of the Monarch machine. Each ribbon spool 44 is carried by and turns with an upright shaft 46 which rotates in a fixed bearing 47 and has secured at its lower end a small beveled gear 48. The gear 48 meshes with a beveled pinion 49 secured to the forward end of a horizontal shaft 50, which shaft is journaled in lugs 51 depending from the top plate 3. Said shaft carries at its rear end a beveled pinion 52, the latter being adapted to mesh with a beveled driving pinion 53 mounted on a driving or power shaft 54, which has its bearings in lugs 55 depending from the top plate.

It will be understood that each ribbon spool is connected with a gear train as above

described, each of said gear trains being adapted to be actuated from a driving pinion 53 on the driving shaft 54. It will further be understood that the driving shaft is capable of longitudinal movement in its bearings and that the longitudinal position of said shaft determines which driving pinion 53 will be in mesh with its cooperating pinion 52 and which ribbon spool will be turned to wind the ribbon thereon. Rotary movement is transmitted to the shaft 54 through beveled pinions 56 and 57, the pinion 56 being operatively connected with the driving shaft and the pinion 57 being operatively connected with the spring drum 41. The pinion 56 is slidably connected with the driving shaft 54 so that said pinion may remain in mesh with the pinion 57 when the driving shaft is moved longitudinally lengthwise in its bearings.

Midway between the ribbon spools the ribbon 45 is threaded through a ribbon vibrator or vibratory carrier 58 which is guided and supported in the upright arms 59 of a bracket 60, said bracket being secured to the top plate by screws 61. The stem or lower portion of the vibratory carrier 58 is bifurcated; the arms 62 of the bifurcation being connected by a cross pin 63 which is engaged by the slot 64 in the forward end of an operating lever 65.

The parts of the machine thus far described do not differ essentially from the corresponding parts of the Monarch typewriter but the operating lever now to be described, its fulcrum and the actuating mechanism for the operating lever have novel features.

As best shown in Fig. 9, the operating lever is provided with a transverse pivot pin 66 tapered at its ends, thereby forming laterally projecting pivot portions which cooperate with bearings formed in the opposite side walls 67 of a fulcrum member. The fulcrum member comprises in addition to the side walls a curved bottom portion 68 connecting said side walls and an angularly disposed securing portion 69 extending inwardly from the top of one of the side walls and formed with a threaded opening which receives a headed securing screw 70, said screw passing downwardly through the top plate and securing the member to the under side thereof and in a fixed relation therewith. The fulcrum member, as viewed from the front of the machine (Fig. 4) is substantially O-shaped and is preferably made of a single piece of sheet metal which may be readily bent into the shape shown. Below the pivot pin 66 the bearing walls 67 are connected by a rivet 71 which serves as a means for adjusting the relation between the bearing walls to take up wear in the pivots of the operating lever 65. A short distance back of its pivot or fulcrum

the rear arm of the operating lever 65 is provided with oppositely disposed laterally projecting studs or pins 72 and 73, which are equi-distant from the fulcrum of the lever. These studs are given separate numbers for convenience of description and are not used conjointly but for ready manufacture are preferably made in the form of a single member or pin driven cross-wise through a perforation in the lever arm. The end of the rear arm of the operating lever terminates in a substantially horizontal contact or stopping face 74. The ribbon-controlling means comprising the vibratory carrier 58 and the operating lever 65 are adapted to be actuated by means which comprise an actuating link 75. The body of the link 75 is preferably cylindrical but the upper end 76 thereof, as will be understood from an inspection of Figs. 5 to 8, is preferably flattened. Suitably secured, as by brazing, to the sides of the flattened portion 76 are oppositely disposed angled arms 77 and 78, said arms being provided with off-set portions 79 and 80 which are horizontally disposed and from the outer ends of which extend vertical portions 81 and 82. The angled arms 77 and 78 provide forks at the upper end of the link 75, said forks embracing between them the rear arm of the operating lever 65. The right-hand fork 81 is provided with a vertically disposed elongated slot 83 which is adapted to cooperate with the right-hand stud 72 and the left-hand fork 82 is provided with a round hole or opening 84 which is cooperative with the left-hand stud 73 when the lever is switched or shifted from side to side to act variably on the lever 65 in a manner presently to be described. At its lower end the link 75 terminates in a goose neck 85 (Figs. 1 and 2), the sides of which may be separated or drawn together to adjust the length of the link. The lower forward end of the goose neck portion is flattened as indicated at 86 and is provided with a hole or opening with which engages a pin 87 projecting laterally from the rear end portion of an arm 88 pivoted on a headed shoulder screw 89 which screws into the central arm 32 of the universal bar frame slightly to the rear of and below the rock shaft 33.

A spring clip 90 is riveted at 91 to the arm 88 and extends rearwardly longitudinally of the latter, said spring clip terminating at its free end in an enlarged apertured portion which cooperates with the stud 87 to maintain the lower end portion of the link 75 securely engaged therewith, but permitting a slight swinging movement of the lower end of the link from side to side of the machine on the pin 87. Beneath the universal bar 35 and about midway between its own ends the arm 88 is crimped or off-set laterally rightward, as indicated at 92, and

projecting forwardly upward from the off-set portion 92 is a lug or stem 93 which is vertically in line with a shorter lug 94 formed in the under side of the universal bar 35 to the right of the connecting arm 36 (Figs. 2 and 3). Surrounding the lugs 93 and 94 is a coiled wire spring 95 which tends to press the arm 88 downwardly about its pivot away from the universal bar 35 and to maintain the top of a vertically disposed slot 96 in the rear end portion of said arm 88 in engagement with a pin 97 projecting laterally from the arm 32 of the universal bar frame. It will be seen that the pin and slot connection 96 and 97 permits a limited relative pivotal movement between the arm 88 and the universal bar frame and that said parts are normally maintained at one limit of their relative movement by the coiled spring 95. Through the spring-controlled arm 88 the link 75 is yieldingly connected with the universal bar frame in such a way that during the downward swinging movements of said arm on its pivots 37 the link 75 will be drawn longitudinally downward with the universal bar frame. If, however, in the course of its downward movement the link 75 be arrested the universal bar frame will be capable of additional downward movement after the arresting of the link 75, said additional downward movement continuing until the pin 97 reaches the bottom of the slot 96. In other words, the extent of additional downward movement of the universal bar frame is equal to the distance the pin 97 may travel in the slot 96.

The connection between the hole in the lower end of the link 75 and the pin 87 on the universal bar frame is such that said link is capable of pivotal movement on said universal bar frame both fore and aft of the machine and from side to side thereof. The pivotal movement of the link from side to side of the machine is provided for the purpose of enabling the forked or bifurcated upper end of the link to be switched or shifted so as to vary its connection with the operating lever 65 in order to act variably on the latter to move it different extents, or so as to disconnect said link entirely from said operating lever.

In connection with the means for shifting the link 75 I provide stopping means shiftable to cooperate variably with the operating lever 65 to arrest it at different points in its travel. I prefer to combine the switching means and the stop means in a single mechanism and in the present instance have shown them so combined, but it is to be understood that if desired separate mechanisms may be provided.

The combined switching or shifting and stop member is best shown in Fig. 9 wherein it is designated as a whole by the reference

numeral 98. The member is preferably made of sheet metal and formed in two pieces. One of these pieces is a flat plate-like part 99 which is yieldingly disposed and is formed at its forward end portion with a rectangular slot 100 which receives the link 75 and permits of longitudinal play of the latter therein. A mouth or passage-way 101 opens into said slot from the left-hand side of the part 99. The slot 100 and its mouth 101 facilitate the arranging of the link 75 in proper position. The cylindrical body portion of the link is of such diameter that in assembling it may be passed through the mouth 101 after which the link may be lowered and the opening in its lower end 86 may be passed over the pin 87, the free end of the spring clip 90 having been previously pulled away from said pin. When the lower end of the link 75 has been connected with the universal bar frame the upper end portion of said link, comprising the three thicknesses or plies 76, 77 and 78, will have been drawn down far enough to enter the slot 100. The dimensions of the slot are such that the upper end portion of the link may slide freely up and down in said slot and be guided by the walls thereof, but the fit is close enough to prevent undue movement of the link to and fro between the walls of the slot, the result being that the openings 83 and 84 in the forked upper end of the link 75 are always normally maintained in line with or in register with their respective cooperating studs 72 and 73, although disconnected therefrom, while at the same time accidental disconnection between one of the studs and its cooperative opening after they have once been connected is prevented. The rear end portion of the plate-like piece or part 99 is suitably connected, as by rivets 102, with the off-set rear portion 103 of an angled part 104, which together with the part 99 constitutes the member 98. The part 104 comprises in addition to the portion 103 a vertically disposed stopping portion 105 bent upwardly from the part 103 and a plate-like arm 106 bent forwardly and at right-angles from one side of the portion 105. The top edge of the portion 105 is provided with stopping faces 107 and 108 which are joined by a sloping face 109, the faces 107 and 108 constituting stops which are cooperative with the stopping face 74 of the operating lever. The lower end portion of the arm 106 is cut away as indicated at 110 so as to fit over and embrace the driving shaft 54, the construction being such that the combined switching and stopping member is adjustable and may be slid lengthwise of said driving shaft and guided thereon by the cut-away 110.

Adjusting means of any suitable construction for sliding the member 98 lengthwise of the shaft 54 may be employed. That

shown in the drawings is substantially the same as the construction shown and claimed in a pending application of George A. Seib to which reference may be had for a fuller disclosure. Other adjusting means may, of course, be employed if desired.

The present construction comprises a slide rod 111 which is suitably connected as by riveting the parts together, with the upper end portion of the arm 106. The slide rod 111 has its bearings in one of the lugs 55 and in another lug 113 depending from the top plate to the left of said lug 55, the rod 111 extending horizontally beneath the top plate and terminating near the right-hand side of the machine. The slide rod is provided with limiting collars 114 and 115 which are adapted to contact with the lug 113 to limit the to and fro movements of the slide rod. Suitably secured to the outer or right-hand end portion of the slide rod 111 is a collar 116 provided with an upwardly extending pin 117. As seen in Figs. 4 and 5 the pin 117 is engaged by the bifurcated end of one arm of a horizontally disposed bell-crank lever 118, said lever being provided with a hub 119 which receives a screw pivot 120 supported in the top plate of the machine. The free end of the other arm of the bell crank lever is provided with a pin 121 which engages a perforation in the rear end of a horizontally disposed and forwardly extending link 122. The link 122 is maintained in engagement with the pin 121 by a retaining spring 123 which is suitably secured to the bell crank lever 118 as by a rivet 124, the free end of said spring being perforated to engage the pin 121 and bear against the link 122, thereby preventing accidental detachment of said link. The forward end of the link 122 is flattened and perforated to receive a pin 125 fixed at the outer end of the short arm of a second bell-crank lever 126, the latter being provided with a hub 127 which receives a pivot screw 128 supported in the top plate.

A retaining spring 129 fixed to the bell-crank lever 126 by a rivet 130 serves to maintain the forward end of the link 122 properly engaged with the pin 125. The longer arm 131 of the bell-crank lever 126 projects forwardly, its free end portion extending in front of the top plate and being provided with a handle or finger button 132. Just back of the button 132 the metal of the arm 131 is depressed to provide a lug or tooth 133 projecting downwardly from the under surface of said arm. The machine is provided with a front plate 134 which is suitably secured to the main frame. The right-hand upper portion of said top plate is cut away at 135 to permit of the passage over it and below the top plate of the arm 131. The upper edge of the cut-away 135 is formed with notches 136, 137 and 138

with which the tooth or lug 133 is adapted to engage. The arm 131 is a spring arm and its tension tends to force it in a downward direction so that of itself it is maintained in engagement with one or another of the notches in the front plate, the latter serving as a positioning member. The arrangement of the parts is such that the finger button 132 is sufficiently forward of the front plate to be readily manipulated.

Referring now to the operation of the devices hereinbefore explained; when it is desired to print on the black field or stripe *a* of the ribbon the finger button 132 is lifted and the lever arm 131 is pressed toward the left until the tooth 133 thereon engages with the notch 138. In this position of the lever arm the parts actuated thereby will be in the positions shown in Figs. 4, 5, 6 and 9. With the parts so positioned, when the printing key levers or the spacing levers are operated the universal bar frame will be swung downwardly about its pivots operating the escapement devices and drawing the link 75 downwardly in the slot 100 in the member 98. The relation between the forked or bifurcated upper end of the link 75 and the operating lever 65 at the beginning of the printing operation is most clearly shown in Fig. 6. From an inspection of said figure it will be noted that the right-hand stud 72 on the operating lever is engaged with the slot 83 in the right-hand fork of the link 75, the stud contacting with the bottom end of the slot. Consequently during the initial part of the downward movement of the actuated printing key lever and of the link 75, the latter will not affect the operating lever 65, which lever, together with the vibratory ribbon carrier, will remain motionless in normal position until the top of the slot 83 contacts with the top of the stud 72. Further downward movement of the key lever and of the link 75, after contact between the upper end of the slot and the pin 72 takes place, operates on the lever 65 to swing the rear arm of said lever downwardly about its fulcrum or pivot and the forward arm of said lever upwardly, thereby raising the vibratory carrier which will be slid upward on the guide bracket 60. The pivotal movement of the lever 65 may continue until the stopping face 74 contacts with the stop or stopping face 107 on the member 98, thereby positively arresting the operating lever, the ribbon carrier, the ribbon and the link 75. The parts are so proportioned and arranged that at the time this positive stoppage of the devices takes place the ribbon will have been raised until that part of the stripe or field *a* thereof, which is between the arms of the ribbon carrier 58, covers the printing point, so that the actuated type will strike against the field *a* and cause a black impression to be made on the paper, while

at the same time the actuated key lever 4 will have reached substantially the lower limit of its depression.

In practice it is, of course, impossible to obtain precisely the same amount of depression for all of the key levers and in order therefore to provide for the slight unevenness in the key depressions which occurs in operating the machine, I prefer to employ the yielding connection between the lower end of the link 75 and the universal bar frame, said connection comprising the spring-controlled arm 88. By the employment of this auxiliary or supplemental yielding connection the sudden or sharp arrest of any of the printing keys is prevented and the touch is softened and eased. When pressure on the actuating key lever is removed the parts will be restored to normal position under the combined influence of gravity and the restoring spring 40, the upper edge of the rear arm of the link 65 contacting with an adjustable screw stop 139 supported in the top plate and serving to determine the normal position of the operating lever and the ribbon carrier. With the parts positioned as described the throw of the vibratory carrier will of necessity be a constant one, said throw being controlled by the operating lever which in turn is positively limited in both directions by the stops 139 and 107. Consequently the types will describe a straight path longitudinal of the black field *a* of the ribbon.

It is to be noted that the extent of movement of the operating lever between its stops 139 and 107 is relatively less than the extent of movement of the link 75, this being due to the lost-motion connection between the parts, which enables the link to move downwardly some distance prior to the commencement of movement of the operating lever, and also permits the operating lever to remain quiescent during the initial stage of depression of the printing keys.

When it is desired to print on the red field, that is, the field *b* of the ribbon, the spring arm 131 is pressed upward until the tooth 133 disengages from the notch 138 and the bell crank lever 126 is then swung rightward about its pivot until the tooth 133 engages with the notch 136. When the bell crank lever 126 is swung rightward, the rear bell crank lever 118 is, through the link 122, also swung rightward and acts on the pin 117 to impart a rightward longitudinal movement to the rod 111 and move the member 98 bodily rightward, causing the latter to swing the upper forked end of the link 75 rightward transversely of the operating lever 65. The rightward swinging movement of the link causes the slot 83 to disengage from the stud 72 and brings the round hole or opening 84 into engagement with the stud 73, said stud fitting closely in said

hole. At the same time the stop or stopping portion 107 is moved to the right from beneath the rear end of the operating lever and the stop 108 is moved beneath said lever and into the path of the stopping face 74 thereon. It will be understood that the position of the operating lever is not affected by the shifting of the actuating link, said lever having the same normal position in all cases. The parts will, after the completion of the shifting movement of the link, be in the positions shown in Fig. 8. If now any of the printing keys be operated, the link 75 will be swung downward and the close connection 73 and 84 between said link and the operating lever will cause the latter to start to move about its fulcrum during the initial stage of the key depression and simultaneously with the beginning of the downward movement of the link. The movement of the parts may continue until the stopping face 74 on the operating lever contacts with the stop 108 on the member 98, thereby positively arresting the operating lever, the vibratory carrier, and the ribbon, as well as the link 75.

With the operating lever and its actuating link connected closely as last described, there is no lost motion and consequently the ribbon is moved a greater distance from normal position than it is when the lost motion connection is operative, the extent of movement of the operating lever in the present instance being relatively as great as the movement of the actuating link.

The mechanism is so proportioned that when the positive stoppage of the parts occurs the ribbon will have been moved upward to cover the printing point with the lower or red field *b* so that red impressions will be made on the paper. When pressure on the actuated key is removed the parts will be restored to normal position as before and subsequent operations of the printing keys will necessarily cause equal extents of movement or "throw" of the vibratory carrier, the types describing a straight path on the field *b* of the ribbon and longitudinally thereof.

If for mimeographing or other purposes it be desired to dispense temporarily with the use of the ribbon and cause the types to coöperate directly with the work sheet on the platen, the actuating mechanism, comprising the link 75, may be disconnected entirely from the ribbon-controlling mechanism comprising the lever 65 and the vibratory carrier or vibrator 58 by swinging the lever arm 131 to cause the tooth 133 thereon to engage with the central notch 137 in the front plate 134. This movement of the lever arm 131 operates through the two bell crank levers, their connecting link 122, and the slide rod 111 to shift the member 98 and swing the upper end of the link 75 trans-

versely of the operating lever 65 until both forks of the link are disengaged from the coöperating studs 72 and 73 on the operating lever; this intermediate position of the operating lever with respect to the forks of the link is illustrated in Fig. 7. From an inspection of said figure it will be noted that the distance between the outer ends of the studs 72 and 73 is less than the distance between the forks of the link 75, so that the up and down movements of the link will not affect the operating lever and during printing operations the ribbon will remain quiescent below the printing point in normal position.

It will be seen that by providing actuating means for the carrier-operating means, which actuating means are shiftable to engage said carrier-operating means at equal distances from its fulcrum and either closely or in such a way as to have a lost motion connection therewith, I am enabled to combine with the operating means stop devices which are operative to arrest said operating means positively and cause predetermined and certain extents of movement of the ribbon from a single normal position; and that the extents of movement of the ribbon may be varied at will but while the parts are positioned to give one of the predetermined movements, the extent of that predetermined movement will remain unvarying. Consequently it only requires a correct initial adjustment and proportioning of the various parts to cause the type impressions to be made wholly at one time on one field or stripe of the ribbon and at another time wholly on another field or stripe. By my present invention, therefore, I secure advantages over prior constructions designed to provide for the use of ribbons having stripes or fields of different characteristics as in such prior constructions, owing to the fact that the movements of the ribbon were not positively controlled, it has happened that at times overthrow of the ribbon took place and the type impressions were printed each partly from one stripe or field and partly from another when such a result was not desired.

By employing devices in the nature of an overthrow preventer, I provide means for positively confining the actions of the types to predetermined selected fields of the ribbon. Furthermore, by employing interchangeable connections between the ribbon-controlling means and the actuating means therefor, one of which connections is close and is immediate in action while the other of said connections is loose and affords lost motion, I am enabled to move the ribbon and arrest it positively at different points without causing any undue strain or give of any of the parts. This is due to the fact that the positive arrest or stoppage of the

parts does not take place in either of the adjusted positions of the actuating link prior to the time when the ribbon has been moved to the desired working position but does take place substantially simultaneously with the arrival of the ribbon at said working position. Any tendency to overthrow, however, would be checked by the stop device and in such case any tendency to strain in the parts will be taken care of by the yielding connection at the universal bar. In this connection it is to be noted that although I prefer to employ a yielding device between the actuating member or link 75 and the universal bar frame, yet nevertheless said device may be dispensed with if desired, and that without it the different extents of movement of the ribbon and its controlling devices and the positive arrest or stoppage thereof at different points would still be effective, the only difference being that the parts might at times be subjected to a slight strain.

It is to be noted further that with a mechanism constructed in accordance with my invention any give or yield due to a tendency of the parts to move after positive arrest would be substantially the same in either of the adjusted positions of the link so that the key touch is not affected but remains practically uniform no matter which working position the link occupies.

While my invention is especially applicable to a ribbon having a plurality of different longitudinal fields or stripes, it is to be understood that said invention is not restricted to use with such a ribbon but that if desired a ribbon having uniform color or characteristics throughout may be employed.

Various changes may be effected within the scope of the invention and parts of it may be employed without other parts.

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

1. In a typewriting machine, the combination with the platen, a series of types and a ribbon-winding mechanism, of ribbon controlling means operative to move the ribbon to cover the printing point during printing operations; actuating means for said controlling means; a member for arresting positively the controlling means at different distances from a single normal position and for shifting said actuating means to vary its point of connection with said controlling means; and an adjusting device for said member comprising a slide rod, a pair of bell crank levers, and a link connecting said bell crank levers.

2. In a typewriting machine, the combination with a platen, a series of types and a ribbon-winding mechanism, of a ribbon vibrator; an operating lever; actuating means therefor; a member adjustable to arrest positively the operating lever at different dis-

tances from a single normal position and to switch said actuating means to vary its point of connection with said operating lever; and adjusting devices for said member comprising a slide rod secured thereto at one end, a bell crank lever connected with said slide rod at its other end, a second bell crank lever provided with a finger piece at the front of the machine and a link connecting said bell crank levers.

3. In a typewriting machine, the combination of a ribbon carrier; a rigid two-armed operating lever having one arm connected with said carrier; actuating means connected with the other arm of said lever; means for varying the normal connection between the actuating means and one arm of said lever; and an adjustable stop coöperative with said lever to arrest it positively at different points, the parts being connected so as to yield after the arrest of the lever.

4. In a typewriting machine, the combination of a ribbon carrier; an operating lever with one arm of which said ribbon carrier is operatively connected; an adjustable stop device coöperative with the other arm of said operating lever to arrest it at different points; actuating means for said operating lever adapted to yield after the arrest of the latter; and means for varying the normal connection between said actuating means and said lever.

5. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; actuating means for said operating lever; a slidable stop device provided with a plurality of stopping portions and slidable transversely of said operating lever to bring one of said stopping portions to position to arrest positively said operating lever, the actuating means yielding after the positive arrest of the lever; and means for varying the normal connection between said actuating means and said lever.

6. In a typewriting machine, the combination of a ribbon carrier; a two-armed operating lever therefor, one lever arm being connected with the carrier; a key-actuated universal bar; a yielding connection between the other arm of said operating lever and said universal bar; means for varying the normal point of connection between said connection and said operating lever; and an adjustable stop for arresting said operating lever at different points.

7. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; a key-actuated universal bar; a link; and a yielding connection between said universal bar and said link, said connection comprising a spring-controlled arm.

8. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; a pivoted key-actuated uni-

versal bar frame; a spring-controlled arm pivoted on said frame; and a link connecting said arm and said operating lever.

9. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; a pivoted key-actuated universal bar frame; an arm pivoted to said universal bar frame; a stop on said frame; a spring operating normally to press said arm against said stop; and a link connecting said arm and said operating lever.

10. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; actuating means for variably actuating said operating lever; printing keys controlling said actuating means, and means for shifting said actuating means to cause it to start movement of said operating lever either during the initial stage of the key depressions or after the first part of the downward movement of the keys has occurred.

11. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; an actuating means, and means for shifting said actuating means to cause it either to engage closely with said operating lever or to have a lost-motion connection therewith.

12. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; a key-actuated universal bar; a link connecting said operating lever and said universal bar, and means for shifting said link to cause it either to engage closely with one of the parts with which it is connected or to have a lost-motion connection with said part.

13. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; a key-actuated universal bar; a link connecting said operating lever and said universal bar, and means for shifting said link to cause it either to engage closely with said operating lever or to have a lost-motion connection therewith.

14. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor provided with oppositely disposed studs or pins; actuating means for said lever including a forked member embracing said lever; and hand operated means for shifting said forked member transversely of said lever so as either to engage one of said studs closely or to engage the other of said studs loosely.

15. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor provided with oppositely disposed studs or pins; a key-actuated universal bar; a link pivoted at its lower end to said universal bar and forked at its upper end to embrace said lever, and means for shifting said link transversely of said lever so as to cause said link either to engage one

of said studs closely or to engage the other of said studs loosely.

16. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor provided with oppositely disposed studs or pins; a key-actuated universal bar; a link; connections between said link and said universal bar, said connections comprising a spring-controlled arm pivoted to the universal bar and to said link, said link being forked at its upper end to embrace said operating lever; and means for shifting said link transversely of the operating lever to cause said link either to engage one of said studs closely or to engage the other of said studs loosely.

17. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; actuating means for said lever; and a combined switching and stop member operative to shift said means to cause the latter either to engage closely with said operating lever or to have a lost motion connection therewith and also operative to interpose stops in the path of said lever to arrest the latter at different points.

18. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; a key-actuated universal bar; a link connecting said operating lever and said universal bar; and a combined switching and stop member operative to shift said link so as to cause it either to engage closely with said operating lever or to have a lost motion connection therewith, said member being also operative to interpose stops in the path of said operating lever to arrest it at different points.

19. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; actuating means for said operating lever; printing keys controlling said actuating means; and shifting means for shifting the actuating means to cause it to start movement of said operating lever either during the initial stage of the key depressions or after the first part of the downward movement of the keys has occurred, said shifting means being further operative to shift said actuating means to a position where it is inoperative on said operating lever.

20. In a typewriting machine, the combination of a ribbon carrier; an operating lever; finger keys; actuating means variably acting on said lever and having a lost-motion connection therewith operative during the initial stage of the key depressions only, to permit relative movement between the parts; and means for setting or shifting said actuating means.

21. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor having a fixed fulcrum; key-operated actuating means; and a mechanical

lost-motion connection between said means and said lever operative only during the initial stage of the key depressions to permit relative movement between said means and said lever.

22. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor; a key actuated universal bar; and a link connecting said operating lever and said universal bar and means for shifting said link to cause it either to engage closely with said operating lever or to have a lost motion connection therewith, said means being also operative on said link to shift it to a position where said link will be disconnected entirely from said operating lever so as to be inoperative thereon.

23. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor provided with oppositely disposed studs or pins; a key-actuated universal bar; a link connected at its lower end to said universal bar and forked at its upper end to embrace said lever; and means for shifting said link transversely of said lever so as to cause said link either to engage one of said studs closely or the other of said studs loosely, said means being also operative on said link to shift it to a position where said link will be disengaged from both studs and is inoperative on said lever.

24. In a typewriting machine, the combination of a vibratory ribbon carrier; an operating lever therefor; actuating devices for said operating lever, and means for shifting certain of said actuating devices to connect them with the operating lever at points equidistant from its fulcrum, said actuating devices being operative to move said lever one extent when connected with it at one point and to move it a different extent when connected with it at another point.

25. In a typewriting machine, the combination of a vibratory ribbon carrier; an operating lever therefor; a key actuated universal bar; and connections between said universal bar and said operating lever, said connections comprising a link embracing the operating lever and shiftable transversely thereof to connect with said operating lever at different points which are equidistant from the fulcrum of said lever, said actuating link being adapted to throw said operating lever different extents according as said link is connected with said operating lever at one or, another of the connecting points.

26. In a typewriting machine, the combination of a vibratory ribbon carrier; an operating lever therefor; an actuating link forked or bifurcated at its upper end to

embrace the lever; and means for shifting said link transversely of said lever to connect the two at one or another of two different points which are equidistant from the fulcrum of said lever, said link operating to throw said lever different extents from a single normal position according as said link and said lever are connected at one or another of the two connecting points.

27. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor having laterally projecting pivot portions; a fulcrum member for said operating lever having bearing walls and provided with a rivet for adjusting said walls to take up wear in the pivots of the operating lever; and actuating means for said operating lever.

28. In a typewriting machine, the combination of a ribbon carrier; an operating lever therefor having a transverse pivot pin; a fulcrum member for said operating lever formed of sheet metal and substantially O-shaped, said member being removably secured at its top to the frame of the machine and having oppositely disposed adjustable bearing walls for the operating lever; and means for actuating said operating lever.

29. In a typewriting machine, the combination of a ribbon carrier, a train of actuating devices therefor including two relatively movable members one of which supports said carrier, and means for relatively shifting said members at one operation to cause said members to engage closely with each other and for shifting said members at another operation so that they will have a lost motion connection with each other, said lost motion alone causing a change of ribbon fields.

30. In a typewriting machine, the combination of a ribbon carrier, an operating lever therefor, an actuating device for the operating lever, one of which elements supports said carrier, and means for relatively shifting said operating lever and said actuating device at one operation so as to cause said lever and said device to engage closely with each other and for relatively shifting them at another operation so that they will have a lost-motion connection, said lost motion alone causing a change of ribbon fields.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 3rd day of July A. D. 1906.

EDWIN E. BARNEY.

Witnesses:

R. W. PHELPS,
HERBERT H. STEELE.