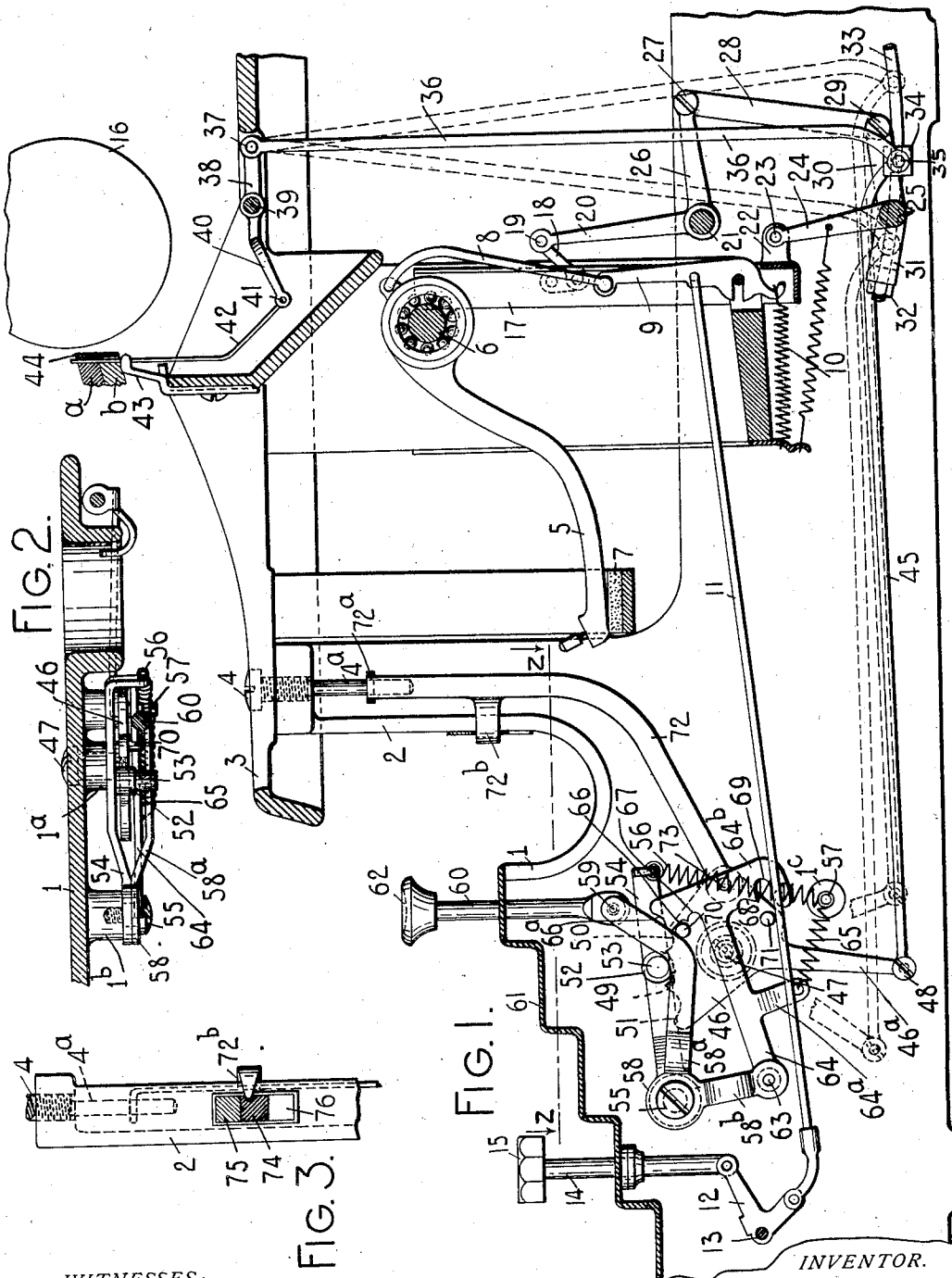


A. T. BROWN.
TYPE WRITING MACHINE.
APPLICATION FILED JULY 22, 1908.

Patented Oct. 26, 1909.

2 SHEETS—SHEET 1.

938,119.



WITNESSES:

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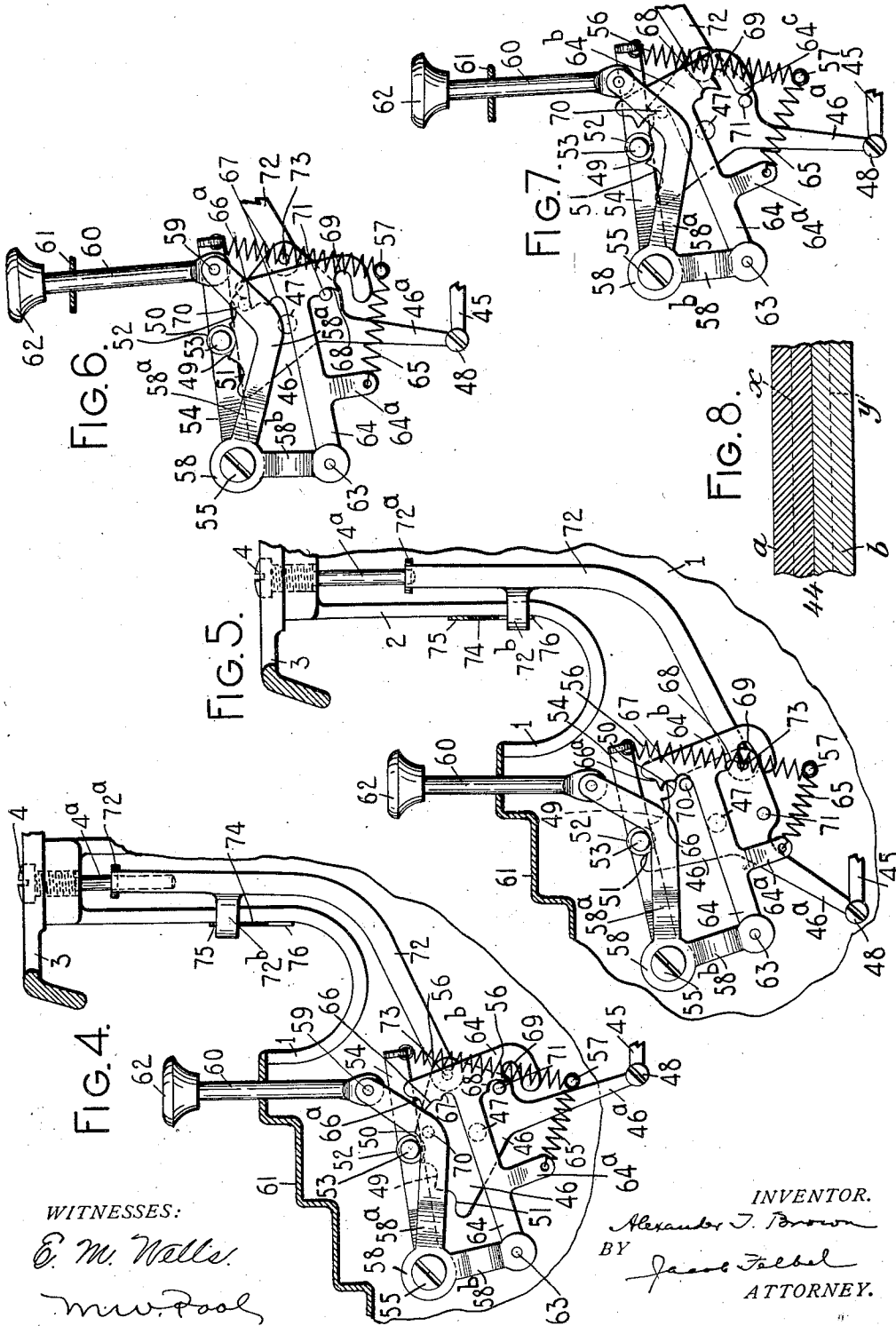
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UNITED STATES PATENT OFFICE.

ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

938,119.

Specification of Letters Patent. Patented Oct. 26, 1909.

Application filed July 22, 1908. Serial No. 444,800.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, 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 has to do especially with ribbon mechanism for typewriting machines and its main object is to provide improved devices of the class specified.

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

I have shown my invention applied to a front-strike typewriting machine generally resembling that illustrated in my pending application Serial No. 305,561, filed March 12th, 1906; but the nature of said invention is such that it may be adapted in whole or in part to other styles of writing machines.

In the accompanying drawings, Figure 1 is a fragmentary vertical sectional view taken about centrally of one form of typewriting machine illustrating my invention. Fig. 2 is a fragmentary horizontal sectional view taken on a plane represented by the line *z-z* in Fig. 1. Fig. 3 is a fragmentary front elevation illustrating improved ribbon indicating devices applied to the left-hand front corner post. Fig. 4 is a fragmentary vertical section view corresponding to Fig. 1 the various parts shown in said Fig. 1 being omitted and other parts being shown in different relations from those in which they appear in said Fig. 1. Fig. 5 is a vertical sectional view corresponding to Fig. 4 but showing various parts in different relations from those in which they appear in said Fig. 4. Fig. 6 is a side view showing detached various parts illustrated in Fig. 4, said parts being in different relations from those in which they appear in said Fig. 4. Fig. 7 is a view corresponding to Fig. 6 but showing certain of the parts in different relations from those in which they appear in said Fig. 6. Fig. 8 is a face view of a portion of a ribbon showing the paths followed by the type impressions.

Referring more especially to Fig. 1, the side plates 1 of the machine are provided with posts 2 to which a top plate 3 is secured

by screws 4 (one screw 4 only being shown). Type bars 5 arranged in a segmental series are each provided with ball bearings which coöperate with a segmental pivot rod 6. The type bars are normally supported on a segmental type rest 7 and each is provided with a train of actuating devices comprising a link 8 and an actuating or sub-lever 9, said sub-lever being provided with a restoring spring 10 and being connected by a link 11 with a bell crank lever 12 pivoted at 13 to a fixed part and pivotally connected with a key stem 14, said key stem being provided with a key or finger button 15. Each type bar is provided with a single type and when the train of actuating devices just described is actuated, the corresponding type is adapted to coöperate with the front face of a cylindrical platen 16 mounted on a carriage (not shown) which is adapted to travel over the top plate from side to side of the machine. The type actuating devices above described are the invention of John H. Barr.

Each of the sub-levers 9 is adapted to actuate a segmental universal bar 17 provided with a pair of rearward extensions or ears 18, each pivotally connected at 19 with an arm 20 fixed to and extending upward from a rock shaft 21 supported in the side plates 1, each arm 20 being adjacent one of the side plates. The universal bar is also provided with a central rearwardly extending ear 22 which is pivotally connected at 23 with an arm 24 fixed centrally to and extending upward from a rock shaft 25 supported in the side plates 1. A rearwardly extending arm 26 is fixed to the rock shaft 21 near one end thereof and has a pivotal connection at 27 with the upper end of a depending link 28, the lower end of said link being pivotally connected at 29 with an arm 30 fixed to and extending rearward from the rock shaft 25. The rock shaft 25 at one end is formed with a loop or yoke 31 to which is secured by a nut 32 a curved arm or rod 33, said arm passing through the center of motion of the rock shaft 25 and extending at opposite sides thereof. A block 34 is slidably mounted on the arm 33 and is adapted to be adjusted on said arm in different predetermined positions at one side or the other of the center of motion of the rock shaft 21. The block 34 is pivotally connected at 35 with the lower forked end of a link 36, said link straddling said block and being pivotally connected at

opposite sides thereof. The link 36 extends upward and is pivotally connected at 37 to a crank arm 38 extending horizontally rearward from a rock shaft 39 which turns in bearings carried by the top plate. The link 36 and crank arm 38 are arranged adjacent one of the side plates 1. Fixed centrally to the rock shaft 38 and extending forward and downward therefrom is an arm 40 which pivotally supports at 41 a vibratory ribbon carrier or vibrator 42 which coöperates with a fixed guide 43. The arm 40, rock shaft 39 and arm 38 constitute an operating lever for the vibrator, the link 36 serving as an actuating link therefor. The arm 33 is arcuate, the pivot 37 being the center from which it is curved. The link 36 depends from this center 37 so that a variation in the position of the lower end of said link and of the block 34 connected therewith may take place without altering the positions of the operating lever and the ribbon vibrator which always has the same normal position. The ribbon vibrator is preferably slotted to permit the ribbon to pass therethrough and be guided thereby. The ribbon shown in the present instance and numbered 44 is divided longitudinally into stripes *a* and *b* of different characteristics; that is, for example, the field *a* may be of one color such as black and the field *b* may be of another color such as red. The ribbon is wound on ribbon spools (not shown) and is fed through the vibrator from one ribbon spool to the other in any suitable way, as for instance in the way disclosed in my pending application hereinbefore referred to.

By moving the block 34 along the arm 33 so as to vary the distance from the rock shaft 25 at which the link 36 operates, the throw communicated to the vibrator 42 at printing operation may be varied. When the link 36 is in the full line position shown in Fig. 1 the vibrator will be lifted far enough to present the upper ribbon field *a* to the types. If the link be moved rearward and set in the rearmost dotted line position shown in Fig. 1, then the vibrator will be lifted at printing operation far enough to present the lower ribbon field *b* to the types. If the link 36 is shifted to the forward dotted line position at the opposite side of the rock shaft 25, then the vibrator will be swung downward away from the printing point each time a printing key is operated. This last operation is commonly brought into play when it is desired to do stencil or mimeographing work, and the arrangement and construction which permits of it is disclosed and claimed in the pending application of Charles E. Tomlinson Serial No. 356,242, filed February 7, 1907. The position of the block 34 and link 36 is controlled by a link 45 which is pivoted at its rear end to the block 34 and link 36 and at its forward end is connected to key-

operated controlling devices with which my present invention is more particularly concerned and which will now be described.

The controlling devices comprise a shifting member or lever 46 which is secured to the inner end of a shouldered pivot screw 47 which is adapted to turn in a bearing opening formed in the left-hand side plate 1 and in a boss 1^a projecting inwardly therefrom, as most clearly shown in Fig. 2. The shifting member 46 is provided with a downward extension or arm 46^a, the lower end whereof is pivotally connected at 48 with the forward end of the link 45. The part of the member or lever 46 adjacent to the pivot thereof is in the form of an irregularly shaped plate which is provided along its upper edge with three adjacent notches or curved depressions 49, 50 and 51. The notches 49 and 50 are equidistant from the center of rotation of the lever or member 46 while the notch 51 is at a slightly greater distance from said center of rotation. A roller detent 52 is adapted to coöperate with the notches to maintain the plate 46 in one or another of three predetermined positions. The detent 52 is journaled on a stud 53 projecting laterally from an arm 54 between the ends thereof. The arm 54 is horizontally disposed and the forward end thereof is pivoted on a screw which is secured in a lug or boss 1^b projecting inward from the left-hand side plate 1 (Fig. 2). As seen clearly in Fig. 2, the rear or free end of the arm 54 is bent inward toward the middle of the machine at right angles to the body portion of said arm 54 and is formed with a hole in which is hooked one end of a coiled spring 56, said spring extending downward and being secured at its lower end to a pin 57 extending inward from a lug 1^c integral with the left-hand side plate 1. The spring 56 tends constantly to pull the arm 54 downward on its pivot 55 and to maintain the roller detent 52 in engagement with one or another of the notches 49, 50 and 51 according as the shifting member 46 is adjusted to bring any particular notch into operation.

The means for adjusting the member 46 comprise a bell crank lever 58 pivoted on the screw pivot 55 outside the arm 54 so that said arm 54 is confined between the bell crank lever 58 and the face of the boss 1^b. The longer arm 58^a of the lever 58 extends rearward, passing beneath the stud 53 which projects inward beyond the detent roller 52 and serves as a stop for the bell crank lever. After passing under the stud 53 the lever arm 58^a turns upward and is pivotally connected at 59 with a vertically disposed key stem 60, said key stem being guided by the usual stepped plate 61 of the machine and terminating at its top in a key or finger button 62. The shorter arm 58^b of the lever 58 extends downward and is pivotally con-

nectioned at 63 with an actuating device or
 floating puller 64 which is in the form of a
 T-shaped arm extending rearward and up-
 ward from the pivot 63 and provided with
 a downward extension 64^a and a head 64^b,
 said extension being connected by a coiled
 spring 65 with the pin 57. The spring 65
 tends to maintain the puller 64 in the nor-
 mal position shown in Fig. 1, from a con-
 sideration of which it will be seen that the
 points 63, 57 and the point of connection of
 the spring 65 with the extension 64^a are sub-
 stantially in the same straight line. If the
 relations of these three points be changed so
 that they are no longer in a straight line,
 then the spring 55 will tend to restore them.
 It will be noted that the spring 65 acting
 through the puller 64 and the arm 58^b of the
 lever 58 tends to maintain said lever 58 in
 the normal position shown in Fig. 1, with
 the arm 58^a contacting with the stud 53 and
 being arrested thereby. When the bell
 crank lever is swung on its pivot by de-
 pression of the key 62, the spring 65 will
 restore said bell crank lever to normal posi-
 tion against the stud 53. It will be noted
 that this stud or stop 53 is under a constant
 downward pull from the spring 56 but is
 held from downward movement normally by
 the engagement of the roller detent 52 with
 the notched edge of the member 46. If the
 stud 53 be raised the lever arm 58^a will
 follow it under the pull of the spring 65. It
 will be understood that the two springs 56
 and 65 act oppositely and that the spring
 56 is the stronger of the two. The head 64^b
 of the puller is arranged at right angles to
 the body thereof and the edge thereof adja-
 cent to the body is at each side of the body
 provided with notches or depressions num-
 bered 66^a, 66, 67, 68 and 69. Below the
 notch or depression 69 the head 64^b ter-
 minates in an extension or nose 64^c. These
 notches and the nose 64^c are adapted to en-
 gage with studs 70 and 71 fixed to and ex-
 tending laterally from the face of the plate-
 like lever or shifting member 46 at opposite
 sides of the body of the puller 64. As will
 be apparent from a consideration of Fig. 1
 the construction is such that if the upper
 end portion of the head 64^b engages with the
 stud 70 and operates on the latter to rotate
 the member or lever 46, said member will be
 turned in one direction while, if the lower
 end portion of the head 64^b engages the stud
 71 and operates on the latter to turn the
 member 46, said member will be turned in
 the opposite direction since the power will
 be applied at the opposite side of the pivotal
 center 47.

Before explaining the operation of the key
 controlled devices above described, certain
 indicating devices which are preferably em-
 ployed in connection with said key controlled
 devices, will be described. Said indicating

devices comprise an arm 72 pivoted at 73 to
 the member 46 and extending rearward and
 upward from the pivoted point 73 until the
 left-hand front post 2 is reached where said
 arm 72 is bent vertically upward and ex-
 tends within said corner posts toward the top
 plate of the machine, terminating in an out-
 wardly bent ear 72^a which is formed with a
 hole to receive a cylindrical guide or exten-
 sion 4^a depending from the screw 4 which
 secures the top plate to the left-hand front
 post. The arm 72 is provided with an exten-
 sion 72^b which curves around the corner post
 and terminates in a beveled or pointed tip at
 the front of said corner post, the beveled tip
 serving as an indicator or pointer and co-
 operating with indicating marks 74, 75 and
 76 on the front face of said corner post. Said
 indicating marks may be constructed of
 any suitable material and may be secured
 to corner posts in any preferred way, or may
 be simply painted directly on the corner
 post. Preferably these indicating marks
 correspond in character with the fields of the
 ribbon. In the present case, for example,
 the ribbon is divided into fields *a* and *b*
 colored respectively black and red. The in-
 dicating mark 74 is therefore preferably
 black in color, and the indicating mark 75 is
 preferably red in color, while the indicating
 mark 76 is preferably white, corresponding
 to the mimeograph position and indicating
 that no imprint will be made on the paper
 when the pointer 72^b is opposite said indi-
 cating mark 76.

Referring to the operation of the novel key
 controlled devices and assuming that the
 parts are positioned normally as shown in
 Fig. 1, it will be observed from an inspec-
 tion of said figure that at this time the block
 34 and link 36 are set in the first position at
 the rear of the rock shaft 25 so that each
 time a printing key 15 is operated to cause
 the corresponding type to print, the vibrator
 42 will be raised far enough to present the
 upper or black field *a* of the ribbon to the
 types. It will further be noted that at this
 time the pointer or indicator 72^b is opposite
 the black indicating mark 74 as shown in
 Fig. 1 and in Fig. 3, which corresponds with
 Fig. 1. Furthermore, it will be observed
 that the notch 66 in the head of the puller 64
 is contiguous to the upper stud 70 on the
 shifting member 46 which member is held set
 at this time by the engagement of the spring
 pressed roller detent 52 with the notch 49;
 and that when said member 46 is thus set or
 maintained it operates through the link 45 to
 maintain normally the block 34 and link 36
 in set positions with respect to the arcuate
 arm 33 and the rock shaft 25, said link 45
 swinging down about the pivotal center 48
 at each operation of a printing key without
 disturbing the relation between the sliding
 block 34 and the arm 33.

Suppose that it be desired to make use of the lowermost or red ribbon field *b*, the key 62 is depressed, thereby depressing the key stem 60 and the arm 58^a of the bell crank lever and causing the arm 58^b of said bell crank lever to pull the puller 64 forward. The forward movement of the puller causes the notch 66 in the head thereof to engage the stud 70 on the member 46 and rotates said member on its pivot 47 until said member 46 is arrested by the engagement of the stud 71 with the notch 69.

Fig. 4 shows the member 46 at the end of its movement and also shows the key 62, bell crank lever 58 and puller 64 in their normal positions to which they have been restored by the operation of the spring 65. The roller detent 52 serves to maintain the member 46 in its new position by engagement with the notch 50. During the return movement of the puller under the influence of the spring 65 said puller will be swung slightly downward so that when it reaches the normal position the notch 68 will be opposite the stud 71. Comparing Figs. 1 and 4 it will be noted that the extension 46^a of the member 46 has been moved rearward a considerable distance. The fragmentary dotted line position of the extension 46^a shown in Fig. 1 in rear of the full line position of said extension corresponds with the position of the said extension illustrated in Fig. 4. During the rearward movement of the extension 46^a it operates to thrust the link 45 rearward, said link causing the block 34 to slide rearward on the arm 33 and thereby swinging the link 36 rearward until it reaches the rearmost dotted line position shown in Fig. 1. During the swing of the member 46 from the position shown in Fig. 1 to that shown in Fig. 4, the detent 52 will ride up over the pointed or tooth-like part, separating the notches 49 and 50 and will be seated and maintained in engagement with the notch 50 by the spring 56 acting through the pivoted arm 54 on which said roller detent is carried. While the roller detent 52 is seated in the notch 50 the block 34 and link 36 will be maintained set at such a distance from the center of rotation 25 that when the printing keys are operated the vibrator 42 will be lifted or thrown far enough to present the lower ribbon field *b* to the types, causing the type impressions to follow a straight path lengthwise of said ribbon field *b*. The swinging movement of the member 46 from the Fig. 1 to the Fig. 4 position operates to raise the arm 72 which will be guided by the screw-extension 4^a and causes the pointer or indicator 72^b to move upward until it is opposite the indicating mark 75, thus indicating to the operator that the corresponding ribbon field *b* is in use.

If it be desired to render the upper ribbon field *a* again operative, the key 62 is de-

pressed from the normal position as shown in Fig. 4 to the position as shown in Fig. 6. The downward movement of the key 62 and the key stem 60 operates through the bell crank lever 58 on the puller 64, drawing said puller forward and causing the notch 68 on said puller to engage with the stud 71 on the member 46 and to operate through said stud to swing said member 46 back to the first position where the member 46 will be arrested by the engagement of the stud 70 with a notch 66^a formed at the upper end of the head 64^b above the notch 66. At this time the roller detent will have been brought into reengagement with the notch 49 in the member 46 as shown in Fig. 6, and consequently when the key 62 is released and the parts pivotally connected therewith are restored to normal position the member 46 will remain set in the position shown in Fig. 6 which position corresponds with the full line position shown in Fig. 1. Of course, the restoration of the shifting member 46 to the Fig. 1 position operates through the link 45 to restore the slidable block 34 and the actuating link 36 to the full line positions shown in Fig. 1. Consequently during subsequent printing operations, the upper ribbon field *a* will again be presented to the types. As the member 46 is swung back to the Fig. 1 position from the Fig. 4 position the arm 72 will also be restored, being guided in its downward movement by the screw extension 4^a; and the pointer 72^b will again be brought opposite the indicating mark 74.

Referring to Fig. 8, the paths followed by the type impressions are indicated by the dotted lines *x* and *y*. The path *x* extends centrally lengthwise of the upper ribbon field *a* and will be followed by the types when the link 36 is set in the full line position shown in Fig. 1. The path *y* extends centrally lengthwise of the lower ribbon field *b* and will be followed by the types when the link 36 is set in the rearmost dotted line position shown in Fig. 1.

If it be desired to dispense entirely with the use of the ribbon for the purpose of preparing stencil sheets or the like, the shifting member 46 will be swung on its pivot to the position illustrated in Fig. 5 in which position the roller detent 52 will be in engagement with the notch 51 and will cooperate with the forward edge of said notch to prevent overthrow of the member 46, said forward edge being preferably elongated for that purpose. The movement of the member 46 to the Fig. 5 position is preferably accomplished by pressing downward on the pointer 72^b which thus serves also as a finger piece for positioning the shifting member 46. Whether at the start the pointer or finger piece 72^b be in the Fig. 1 position or the Fig. 4 position the result will be the

same and downward pressure on it will serve to swing the shifting member 46 on its pivotal center until movement is prevented by the extended forward edge of the notch 51 engaging with the detent 52. In order to prevent the head 64^b from engaging at its notched edge with the stud 70 to arrest the member 46 in its swing to mimeographing position, the notch 52 in said member 46 is, as has been stated, at a greater distance from the pivotal center 47 than are the notches 49 and 50. The result will be that during the swing of the member 46 the notch 49 will pass out of engagement with the roller detent 52 and as the notch 51 is brought into engagement therewith said roller detent will be raised, thereby lifting the arm 54 which carries it and permitting the spring 63 to move the puller 64, bell crank lever 58 and key stem 60 to the positions shown in Fig. 5. The movement thus communicated to the puller 64 carries the head 64^b thereof rearward away from the stud 70 and prevents said head from obstructing the movement of said stud and of the shifting member. During the movement of the member 46 to mimeographing position the extension 46^a thereof will be swung forward until arrested in the position shown in Fig. 5, which position corresponds with the fragmentary dotted line position as shown in Fig. 1 forward of the full line position of said extension 46^a illustrated in said Fig. 1. As a result of the forward swing of the extension 46^a, the link 45 will be drawn forward and the block 34 slid forward along the arm 33 past the pivotal center 45, arresting and setting the link 36 in a position forward of said pivotal center as illustrated by the forward dotted line position of said link in Fig. 1. Consequently if the printing keys be operated while the member 46 and link 36 are normally maintained set as described, the vibrator 42 will be swung downward farther away from the printing point, lowering the printing portion of the ribbon and leaving the platen in the vicinity of the printing point entirely uncovered and unobstructed. When it is again desired to make use of the ribbon, this may be accomplished by pulling upward on the pointer or finger piece 72^b and this operation may be preferable if the lowermost ribbon field *b* is at once to be brought into use, in which event the part 72^b is moved upward until it is opposite the indicating mark 75, thus swinging the shifting member 46 to the Fig. 4 position. If, however, the black ribbon field is to be brought into use at the end of the mimeographing or stencil making operation, this may be and preferably is accomplished by depressing the key 62, moving it and the bell crank lever 58 and puller 64 from the positions illustrated in Fig. 5 to those illustrated in Fig. 7.

From Fig. 5 it will be noted that at the beginning of the depression the notch 67 in the puller is opposite and close to the stud 70. Consequently as the puller 64 is moved forward under the depression of the key 62, the notch 67 will engage with the stud 70 and will operate through it to turn the shifting member 46 on its pivotal center from the position shown in Fig. 5 to that shown in Fig. 7, in which position the member 46 will be arrested by the contact of the stud 71 with the nose 64^c on the puller. It will be noted that at this time the roller detent 52 will be in engagement with the notch 49 so that when the key 62 is released and restored with the connected parts to normal position, the member 46 and the parts it controls will be maintained set by the engagement of the roller detent 52 with the notch 49 in position to cause the upper ribbon field *a* to cooperate with the types when the printing keys are operated. The restoration of the key 62 and connected parts from the positions shown in Fig. 7 to normal position, will operate to swing the puller 64 slightly downward so that the notch 66 will be brought opposite and close to the stud 70 in position to cooperate with said stud when the key 62 is next depressed. From what has just been said it is apparent that the next succeeding depression of the key 62 will operate to swing the member 46 to the Fig. 4 position and to again bring the ribbon field *b* into operation. It will be apparent therefore that instead of moving the parts from the mimeographing position illustrated in Fig. 5 to the position illustrated in Fig. 4 wherein the lower ribbon field *b* is operated, by manipulating the pointer or finger piece 72^b as above described, the same result can be accomplished by two successive depressions of the key 62. The first of said depressions as above described moves the member 46 from the Fig. 5 position to that shown in Fig. 7 and the second of said depressions will operate to move the member 46 from the Fig. 7 position to that illustrated in Fig. 4.

Usually heretofore one ribbon or inking field or color has been rendered inoperative and another ribbon field or inking field or color concurrently rendered operative in one of two ways, first by the means of a switch lever, and secondly by means of two separate keys. When the switch lever has been used it has been swung from one position to another and has remained in one or the other of the two positions as long as the ribbon field or inking field or color remains unchanged. When the two separate keys have been employed one key has been utilized to render one ribbon or inking field operative and the other key to render another ribbon or inking field operative. In the case of the switch lever, it

occupies normally one of two positions and the operator must in consequence reach to one or the other of two different points or places to change ribbon fields or inking fields. The same thing is equally true when two separate keys or key buttons are used. In my construction, however, there is but one key and that occupies always the same place. The hand of the operator can without trouble and almost intuitively reach the key so as to make the change in the ribbon in the quickest possible time. The key in the present instance is a downwardly operating key like the character keys of the keyboard and is located in or near the keyboard preferably, and hence is more convenient for the operator than is a switch lever which is usually movable sidewise and always necessitates a different kind of movement on the part of the operator from that by which the printing keys are operated. This single key returns automatically to normal position when downward pressure is removed and hence for each change of ribbon field or inking field the key has the same downward movement and from the same point or position.

Between the key and the ribbon is a transmitting train of devices in which is a reciprocating part or pivoted shifting member or lever that is acted upon and controlled by the key in such a way that one downstroke of the key swings the switching member on its pivot in one direction or forward and the next succeeding downward movement of the same key moves the switching member in the opposite direction or rearward.

It will be noted that I combine a vibratory ribbon carrier or ribbon vibrator and actuating means therefor with means for varying said actuating means for changing ribbon fields or inking fields; that these varying means or means for changing ribbon fields are independent of the carriage; that said varying means include a single ribbon changing key which when struck or pushed communicates its motion to the devices for changing ribbon fields; that the single key which when at rest occupies always the same position regardless of which ribbon field or inking field is in service; that this single key automatically returns to the same invariable position after each operation of changing ribbon fields; that the ribbon field changing means further comprises a reciprocating part, which reciprocating part in the present instance is a pivoted member or shifting member that is controlled, or operated, by said key; that said pivoted member is provided with studs at opposite sides of its pivot; that said studs are alternately operative devices by which said member may be turned on its pivot in opposite directions to render different ribbon fields operative at

successive key strokes of said key; that between said key and said pivoted shifting member is a train of devices controlled by said key and comprising an actuating member, which actuating member is operative on said pivoted member; that said actuating member in the present instance is in the form of a T-shaped puller, the body whereof lies between the engageable devices or studs and the sides of the head whereof is adapted to cooperate alternately with said studs, being provided with depressions or notches for that purpose; that certain of said notches cooperate with said studs to limit the turning movements of said pivoted shifting member; that said actuating member or puller is pivotally supported on one arm of a bell crank lever, the other arm of said lever being pivotally connected with the stem of said key; that a spring cooperates with said actuating member or puller and serves normally to position said puller, said puller being what may be termed a floating device; that a detent is provided to cooperate with notches in said shifting member to maintain said member set in one or another of a plurality of predetermined normal positions; that two oppositely acting springs operate on said detent; that said detent is mounted on a pivoted arm; that the ribbon field changing means comprises means for rendering the ribbon inoperative at printing operation; that in the present instance at printing operation when the ribbon is not to be used it is moved downward away from normal position at each operation of a printing key; that the pivoted shifting member is adapted to be swung or turned to a position so as to cause the ribbon to move away from the printing point at printing operation as last described; that this movement of the shifting member is not accomplished by the key hereinbefore referred to for changing ribbon fields but is accomplished by operating a finger piece; that in the present instance this finger piece also serves as a pointer to cooperate with a fixed indicating surface to indicate which ribbon field is in use or that the ribbon is not in use at all; that the pointer or movable indicating part is pivotally connected with the pivoted shifting member or reciprocating part; that said pointer cooperates with a fixed indicating part or plate which is divided into portions corresponding with the ribbon fields and is also provided with a portion indicating that the ribbon is not in use; that the pointer or movable indicating part is adapted to cooperate with the same portions of the fixed indicating part at alternate key operations, that is to say, at one key operation the pointer will cooperate with one portion, say the black portion, at a second key operation the pointer will cooperate with the red portion, that at a third key

operation the pointer will again cooperate with the black portion and at a fourth key operation the pointer will again cooperate with the red portion; that said pointer or movable indicating part is key-operated, being controlled by the same key that controls the pivoted shifting member, and is adapted to be moved in opposite directions at successive key operations; and that the finger piece or pointer is capable of moving the reciprocating part or pivoted shifting member to a greater extent in one direction than is the key 62 so as to cause the notch 51 to cooperate with the detent 52, thus setting the mechanism for mimeograph work.

Various changes may be made in the arrangement of parts and combinations of devices without departing from my invention.

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

1. In a typewriting machine and in a ribbon mechanism, means for changing from one inking field to another, said means comprising a single key and a reciprocating part, and means whereby said reciprocating part is moved forward by one stroke of the key and is moved backward by another stroke of the key in the same direction.

2. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a pivoted member provided with alternately operative devices and means cooperative with said devices by which said member may be turned on its pivot in opposite directions to render different ribbon fields operative.

3. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a pivoted member provided with alternately operative devices and means cooperative with said devices by which said member may be turned in opposite directions by successive key strokes to render different ribbon fields operative.

4. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a key and a pivoted member provided with alternately operative devices and means cooperative with said devices by which said member may be turned on its pivot in one direction by one stroke of said key and may be turned in the opposite direction by another stroke of said key in the same direction as the first stroke thereof.

5. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a key having a single normal position and a pivoted member provided with alternately operative devices and means cooperative with said devices by which said member may be turned on its pivot in one

direction by one stroke of said key and in the opposite direction by the next succeeding stroke of said key, the operative strokes of said key being in one and the same direction for both directions of movement of said pivoted member.

6. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a key, a pivoted member, means by which said member is turned in one direction by one stroke of said key and is turned in the opposite direction by another stroke of said key in the same direction as the first stroke thereof, and a detent cooperative with said member to maintain it set in the positions to which it may be turned by said key.

7. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a key, a pivoted member, means by which said member is turned in the opposite direction by the next succeeding stroke of said key, the operative strokes of said key being in one and the same direction for both directions of movement of said pivoted member, and a detent cooperative with said member to maintain it set in the positions to which it may be turned by said key.

8. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member and a key-controlled actuating member operative on said pivoted member first at one side of the pivot thereof and then at the opposite side of the pivot thereof, means for actuating the ribbon at printing operation, and leverage changing devices for said actuating mechanism connected to said pivoted shifting member.

9. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a reciprocating member provided with engageable devices, and a key-controlled actuating member provided with engaging devices operative on said engageable devices, certain of said engaging devices cooperating with said engageable devices to move said reciprocating member and certain of said engaging devices cooperating with said engageable devices to arrest said reciprocating member.

10. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member provided with engageable devices at opposite sides of its pivot, and an actuating member provided with notches cooperative with said engageable devices, one of said notches cooperating with one of said engageable devices to swing said pivoted member on its pivot while in the course of the same operation another of

said notches coöperates with the engageable device at the opposite side of said pivot to limit the turning movement of said pivoted member.

5 11. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member, an actuating member therefor, and a key, the actuating member operating on opposite sides of the pivot
10 of said pivoted member at successive strokes of said key, means for actuating the ribbon at printing operation, and leverage-changing devices for said actuating mechanism connected to said pivoted shifting member.

15 12. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member, an actuating member, a key, and a lever pivotally connected
20 both with said key and with said actuating member, the actuating member operating on the opposite side of the pivot of said pivoted member at successive strokes of said key, ribbon vibrating devices, and connections
25 between said pivoted shifting member and certain of said vibrating devices, said shifting member operating to vary the extent of movement communicated to the ribbon by
30 said actuating devices.

35 13. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member, a lever, an actuating member for said pivoted shifting member, said actuating member being pivotally
40 supported on said lever, and a spring assisting to normally position said actuating member, said actuating member operating alternately on opposite sides of the pivot of
45 said pivoted shifting member to move said pivoted shifting member, ribbon vibrating devices, and connections between said pivoted shifting member and certain of said vibrating devices, said shifting member operating to vary the extent of movement communicated to the ribbon by said actuating devices.

50 14. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member, a lever, an actuating member for said pivoted member, said
55 actuating member being pivotally supported on said lever, a spring assisting to normally position said actuating member, and a key, said actuating member operating on said pivoted shifting member at opposite sides of the pivot thereof at successive key strokes,
60 ribbon vibrating devices, and connections between said pivoted shifting member and certain of said vibrating devices, said shifting member operating to vary the extent of movement communicated to the ribbon by
65 said actuating devices.

15. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member, a lever, an actuating member for said pivoted member, said
70 actuating member being pivotally supported on said lever, a spring assisting to normally position said actuating member, and a key provided with a stem which is pivotally connected with said lever.

75 16. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member provided with engageable devices at opposite sides of its
80 pivot, a bell crank lever, an actuating member pivoted to said bell crank lever and extending between said engageable devices, said actuating member being provided with a head coöperative with said devices, and a
85 key connected with said bell crank lever, the head of said actuating member being adapted to engage alternately with said engageable devices at successive key strokes.

90 17. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member provided with laterally extending studs at opposite sides of
95 its pivot, a T-shaped puller provided with notches engageable with said studs, a bell crank lever with one arm of which said puller is pivotally connected, a spring for said puller, and a key, the stem whereof is pivotally connected with the other arm of
100 said bell crank lever.

18. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member provided with laterally
105 extending studs at opposite sides of its pivot, a T-shaped puller having notches engageable with said studs, a bell crank lever with one arm of which said puller is pivotally connected, a spring for said puller,
110 and a key the stem whereof is pivotally connected with the other arm of said bell crank lever, printing key levers, a rock shaft controlled thereby, an arm fixed to said rock shaft, a block slidable on said arm, a link
115 connecting said block with said shifting member, a ribbon vibrator, and connections between said vibrator and said block.

19. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member provided with laterally
120 extending studs at opposite sides of its pivot, a T-shaped puller engageable with said studs in alternation, a bell crank lever with one arm of which said puller is pivotally connected, a spring for said puller and
125 a key, the stem whereof is pivotally connected with the other arm of said bell crank lever, printing key levers, a rock shaft con-
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5 trolled thereby, an arm fixed to said rock shaft, a block slidable on said arm, a link connecting said block with said shifting member, a ribbon vibrator, and connections between said vibrator and said block, said
10 connections comprising an operating lever on which said vibrator is pivotally supported and an actuating link connected at one end to said operating lever and at the opposite end to said block.

15 20. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a key-controlled shifting member, a detent coöperative with said shifting member to maintain it set in one or another of a plurality of predetermined normal positions, and oppositely acting springs connected with said detent.

20 21. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a key-controlled shifting member, a pivoted arm, a detent mounted on said arm and coöperative with said shifting member to maintain
25 it set in one or another of a plurality of predetermined normal positions, a spring connected with said arm and tending to turn it on its pivot in one direction, and a second spring operative on said arm and tending to
30 turn it in the opposite direction.

35 22. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a key-controlled shifting member, a pivoted arm, a detent mounted on said arm and coöperative with said shifting member to maintain
40 it set in one or another of a plurality of predetermined normal positions, a spring connected with said arm and tending to turn it on its pivot in one direction, and a spring-pressed lever tending to turn said arm in the opposite direction.

45 23. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member provided with a plurality of depressions or notches, a detent coöperative with said notches, a pivoted arm
50 on which said detent is supported, a spring for turning said arm in one direction, an actuating device for said shifting member, a key-controlled lever connected with said actuating device, and a second spring connected
55 with said actuating device and operative through said key-controlled lever on said arm, said second spring tending to turn said arm oppositely from said first spring.

60 24. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a single key and means for retaining said key when at rest in the same position regardless of which ribbon field is in service,
65 said means also including devices for render-

ing the ribbon inoperative at printing operation.

25. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a single key and means for returning said key after each operation automatically to the same invariable position regardless of which ribbon field is brought into service, said means also comprising devices
75 for rendering the ribbon inoperative at printing operation.

26. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a single key operative always from the same normal position for each ribbon field, said means comprising devices for rendering the ribbon inoperative at printing operation.
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27. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a single key and a reciprocating part, and means whereby said reciprocating
90 part is moved in one direction by one stroke of said key and in the opposite direction by another stroke of said key in the same direction, said means also comprising devices for rendering the ribbon inoperative at
95 printing operation.

28. In a typewriting machine and in a ribbon mechanism, the combination of means for automatically moving the ribbon at will in either of two opposite directions from
100 normal position at printing operation, and hand-controlled means for setting said first named means to cause such movements, said hand-controlled means comprising a pivoted shifting member provided with notches at
105 different distances from its center of rotation, a detent coöperative with said notches, a pivoted spring-controlled arm on which said detent is mounted, an actuating device for said shifting member, a key, connections
110 including a lever between said key and said actuating device, and a second spring operative on said actuating member and said lever, said lever being maintained in engagement with said pivoted arm by said second
115 spring.

29. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to another, said means comprising a key-operated
120 reciprocating part; and indicating devices including a movable indicating part secured to said reciprocating part and also including a fixed indicating part, said movable part being adapted to coöperate with the same
125 portions of said fixed part at alternate key operations.

30. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to an-
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other, and indicating devices comprising a key operated indicating part and a relatively fixed indicating part, said key-operated part being movable in opposite directions at successive operations.

31. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to another, and indicating devices comprising a key-operated indicating part and a relatively fixed indicating part, said key-operated part being movable in opposite directions at successive key operations, the key controlling said key-operated part being movable from an unvarying normal position for both directions of movement of said key-operated part.

32. In a typewriting machine and in ribbon mechanism, means for changing from one ribbon field to another, said means comprising a shifting member provided with alternately operative devices by which said member may be moved in opposite directions to render different ribbon fields operative; and indicating devices comprising an indicator or pointer connected with said member.

33. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member, and a key-controlled actuating member operative on said shifting member first at one side of the pivot thereof and then at the opposite side of the pivot thereof, and indicating devices comprising an indicator or pointer connected with said pivoted shifting member.

34. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another comprising a pivoted shifting member, an actuating member therefor, and a key, the actuating member operating on opposite sides of the pivot of said pivoted member at successive strokes of said key, and indicating devices comprising an indicator or pointer pivotally connected with said pivoted member and coöperative with a fixed indicating plate.

35. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to another, said means comprising a key-operated reciprocating part; and indicating devices including a movable indicating part secured to said reciprocating part and also including a fixed indicating part, said movable part being adapted to coöperate with the same portions of said fixed part at alternate key operations, said movable part also serving as a key or finger piece by which said reciprocating part may be moved.

36. In a typewriting machine and in a ribbon mechanism, means for changing from one ribbon field to another, said means comprising a member provided with alternately operative devices by which said member

may be moved in opposite directions to render different ribbon fields operative; and indicating devices comprising an indicator or pointer connected with said member, said indicator also serving as a key by which said member may be moved.

37. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to another, said means comprising a single key and a reciprocating part that is moved in opposite directions at successive strokes of said key; and indicating devices including a pointer, which pointer may serve also as a finger piece for moving said reciprocating part.

38. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to another, said means comprising a single key and a reciprocating part that is moved in opposite directions at successive strokes of said key; and indicating devices including a pointer which pointer may serve also as a finger piece for moving said reciprocating part to a greater extent in one direction than said key is capable of moving said reciprocating part.

39. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to another, said means comprising a single key and a reciprocating part that is moved in opposite directions at successive strokes of said key; and indicating devices including a pointer, which pointer may serve also as a finger piece for moving said reciprocating part to a greater extent in one direction than said key is capable of moving said reciprocating part, the greater extent of movement of said pointer or finger piece serving to render the ribbon inoperative at printing operation.

40. In a typewriting machine and in a ribbon mechanism, the combination of means for changing from one ribbon field to another, said means comprising a single key, a reciprocating part that is moved in opposite directions at successive strokes of said key, and a finger piece for moving said reciprocating part to a greater extent in one direction than said key is capable of moving said reciprocating part, the greater extent of movement of said reciprocating part under the action of said finger piece serving to render the ribbon inoperative at printing operation.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 18th day of July, A. D. 1908.

ALEXANDER T. BROWN.

Witnesses:

S. DAVIS,

C. E. TOMLINSON.