

No. 818,745.

PATENTED APR. 24, 1906.

W. L. COOKE.

RIBBON SHIFTING MECHANISM FOR TYPE WRITERS.

APPLICATION FILED JUNE 11, 1902.

3 SHEETS—SHEET 1.

Fig. 1.

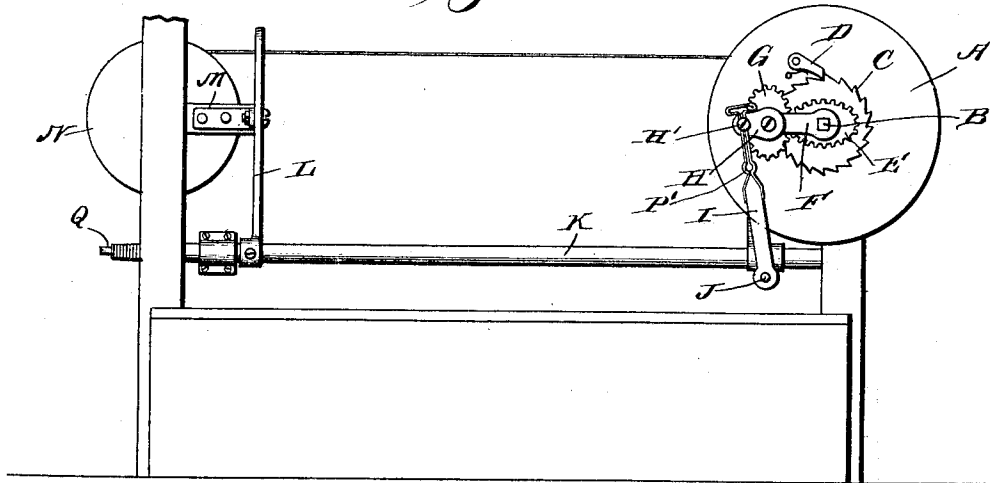
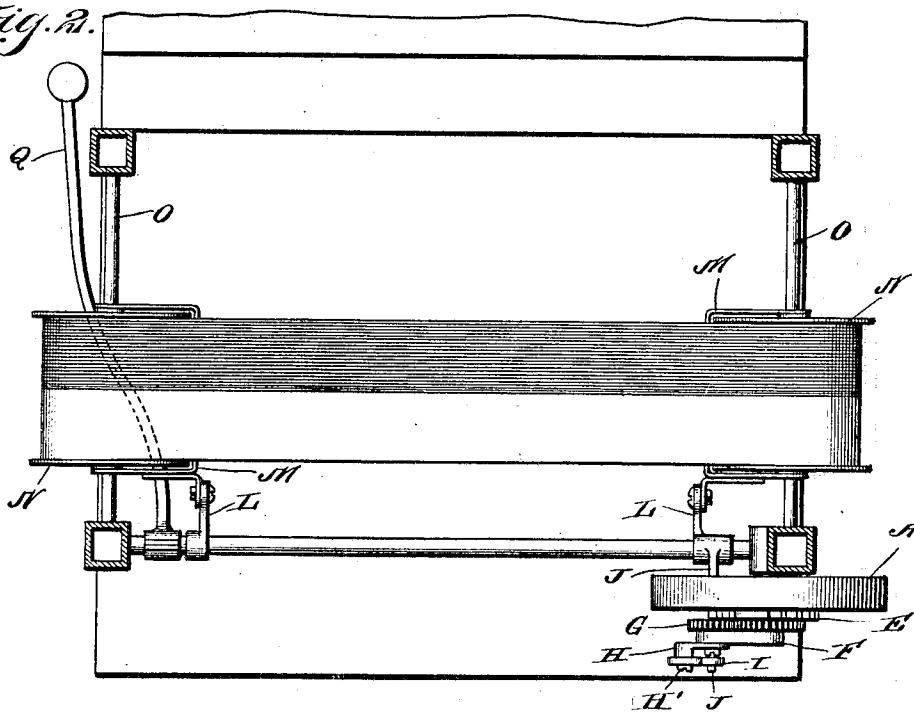


Fig. 2.



Witnesses
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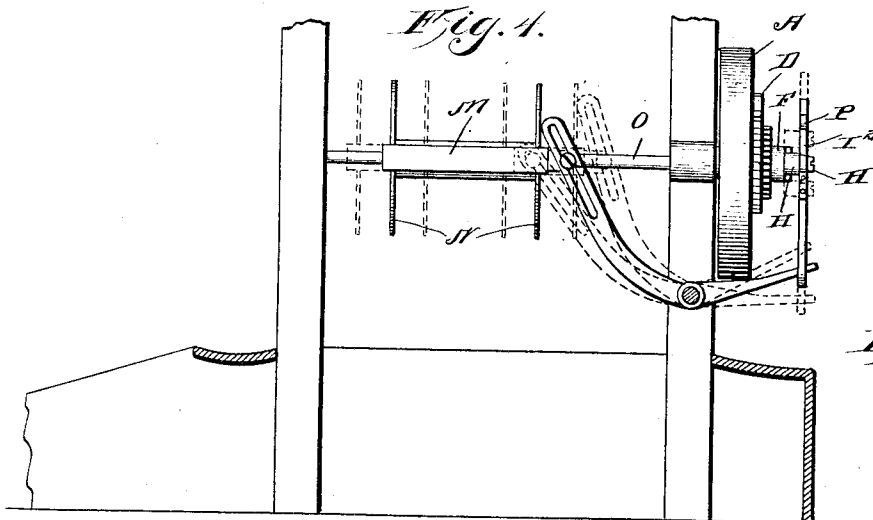
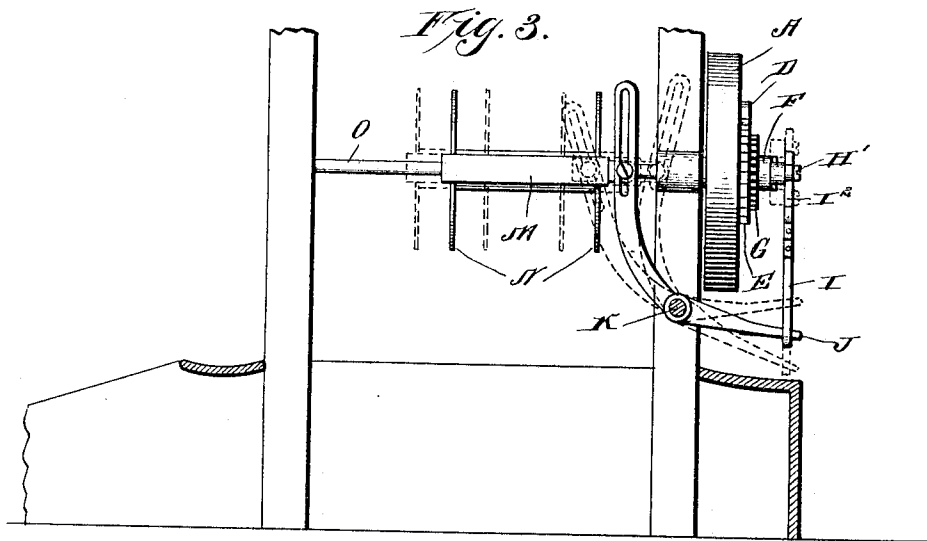


Fig. 5.

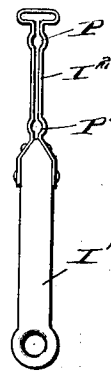
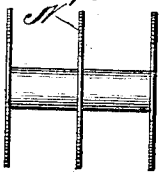


Fig. 7.



Witnesses

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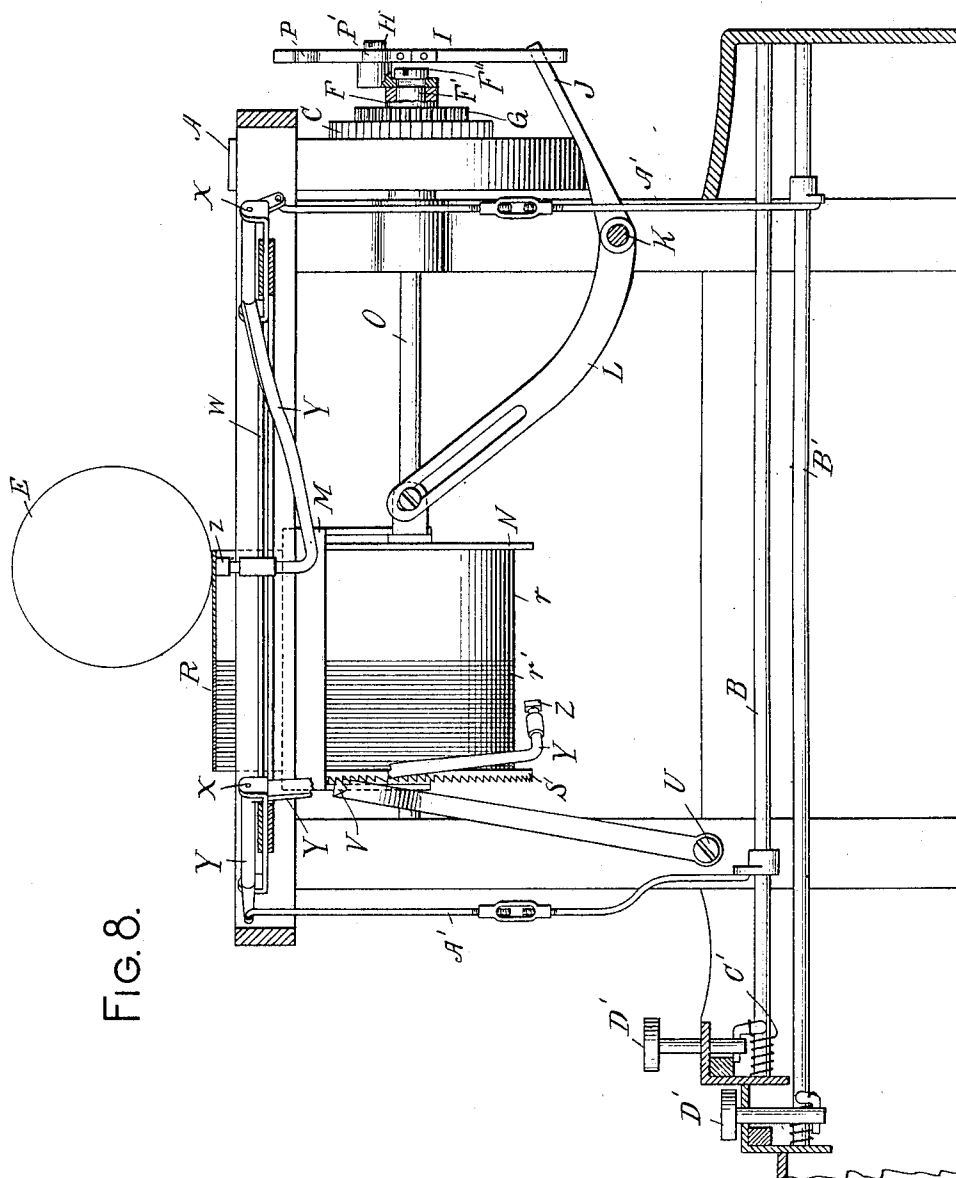
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM L. COOKE, OF NEWPORT NEWS, VIRGINIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

RIBBON-SHIFTING MECHANISM FOR TYPE-WRITERS.

No. 818,745.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed June 11, 1902. Serial No. 111,083.

To all whom it may concern:

Be it known that I, WILLIAM L. COOKE, a citizen of the United States, residing at Newport News, county of Warwick, and State of Virginia, have invented a certain new and useful Improvement in Ribbon-Shifting Mechanism for Type-Writers, of which the following is a specification.

My invention relates to a new and useful improvement in ribbon-shifting mechanism for type-writers, and has for its object to provide a mechanism to be applied to type-writers wherein either ribbons of different characteristics or colors arranged side by side are used or a ribbon having different characteristics or colored with different colors, the colors preferably running longitudinally of the ribbon and arranged side by side on the same, and this mechanism which I provide will enable the operator to shift from one characteristic or color to the other by the simple manipulation of a key.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a rear view of a Smith Premier type-writer with my improvement applied thereto; Fig. 2, a plan view of the same; Fig. 3, an end view of a Smith Premier type-writer with my improvement applied thereto, showing the mechanism in position for utilizing one color ribbon; Fig. 4, a similar view to Fig. 3, showing the mechanism in position for utilizing the other color ribbon; Fig. 5, a front elevation of my improved pitman; Fig. 6, a perspective view of the crank; Fig. 7, a front elevation of a ribbon-spool divided so as to accommodate two ribbons of different colors. Fig. 8 is a vertical front-to-rear sectional view, taken about centrally, of a type-writing machine embodying my invention, parts of the machine being omitted.

My invention is adapted particularly to

the Smith Premier type-writer, but of course would be capable of use on other forms of writing-machines.

A represents the casing containing the spring for feeding the carriage. This casing revolves around a stationary shaft B, and journaled loosely upon this shaft is a ratchet-wheel C, which is engaged by a spring-pawl D, the pawl being carried by the spring-casing A. Secured to the ratchet-wheel C is an elliptical gear E. Thus by reason of the pawl and ratchet the gear E is only revolved when the carriage is fed step by step by means of the spring, but remains stationary when the carriage is returned. Secured rigidly to the shaft B at its outer end is an arm F, and fixed on a short shaft F', which is journaled upon the outer end of this arm, is another elliptical gear G, which is in mesh with the gear E. Secured rigidly to the same shaft as the gear G and revolving therewith is a crank-arm H, said crank-arm being formed with an opening H'', Fig. 6, which fits over the rear end of the shaft F', which is squared for the purpose. A headed screw F'' screws into the end of the shaft F' and secures the member or crank-arm H in place. Pivoted to the wrist-pin H' of the crank-arm H is a pitman I, which is connected at its lower end to an arm J, which arm is secured rigidly to a rock-shaft K, extending across the machine at the rear, so that each time the pitman I is raised and lowered by the revolving of the crank H the shaft K is rocked. Secured rigidly to the shaft K at each end are upwardly-extending arms L, which are slotted at their upper ends, and through the slot extends a pin or screw, which is connected to yokes M, embracing the ribbon-spools N. These ribbon-spools are mounted to slide upon transverse shafts O, and thus as the shaft K is rocked the ribbon will be caused to travel backward and forward laterally of the machine, and at the end of each lateral movement of the ribbon-spools mechanism is provided (shown in the drawings in Fig. 8 and presently to be described) which will revolve the spools slightly, so as to wind the ribbon upon one and unwind it from the other. Thus all the surface of the ribbon is utilized in writing.

In the ordinary Smith Premier type-writer

as now used the crank-arm H is of such a size as to give the proper movement to the pitman, so that the ribbon-spools will travel backward and forward along the transverse shafts O a distance nearly equal to the width of the ribbon. In my invention I either divide the ribbon longitudinally by imaginary line and color the ribbon with different colors upon each side of the line or I utilize two ribbons of different colors one-half the width of the ordinary ribbon and place a divider N' upon the ribbon-spools, as shown in Fig. 7, to separate the ribbons. It will now be obvious that when writing with one color it will be necessary to limit the lateral movement of the ribbon-spools, so that said spools will only travel a distance backward and forward equal to the width of one of the ribbons or one of the colors upon the ribbon, and I accomplish this limitation of movement by reducing the distance between the center of the shaft upon which the crank H is secured and the center of the wrist-pin of the crank one-half. Thus it will be seen that the movement imparted to the pitman I will only be one-half of that ordinarily used, and therefore the ribbon-spools will only be given one-half of the usual movement.

The pitman I consists of a lower portion I', to which is secured and extends upward therefrom the upper spring portion I², and this upper spring portion consists of one piece of metal secured at each end to the portion I', so as to form a loop, the two sides of the loop being brought together and running upward parallel with one another, and at two points the metal is bent outward in a semicircle from each side, so that the two sides will form bearings in which the crank-pin of the crank H is adapted to rest. There are two of these crank-pin bearings formed in the spring portion I², the upper one represented by the letter P and the lower one by the letter P'. When the crank-pin H' of the crank is resting within the bearing P in the spring portion I², as shown in Fig. 1, the ribbon-spools will only be caused to travel backward and forward across the forward ribbon or the color of the ribbon nearest the front of the machine. This position is illustrated in Fig. 3. If it is desired to shift to the other color by pushing upward upon the pitman I, the two sides of the spring portion I² would be caused to spread, and the crank-pin H' will travel between these sides and spring into the bearing P', and by thus pushing upward upon the pitman I the ribbon-spool is shifted along the shafts O toward the forward end of the machine, and then the movement imparted to the spools by the revolving of the crank will be limited to the width of the other ribbon or the other color of the ribbon. This position is shown in Fig. 4.

For the purpose of facilitating the pressing upward of the pitman I, I secure to the shaft

K a key-lever Q, which extends forward to a point near the key board, and by pressing downward or pulling upward upon this key-lever the crank-pin can be transferred from one to the other of the bearings P and P' in the pitman I. Thus it will be seen that by the simple manipulation of the key-lever the ribbon can be changed from one color to the other and by the addition of no more mechanism than is now in use upon the Smith Premier type-writer.

Fig. 8 shows a central sectional view, with parts omitted, of a type-writing machine which is essentially similar to the No. 2 Smith Premier type-writer and to the machine illustrated in Figs. 1 to 7. In Fig. 8 a ribbon R is represented as wound upon the spool N, which is the left-hand spool in the machine, and said ribbon is shown as a multiplex ribbon, being divided lengthwise into two differently-colored stripes or fields, (indicated by the reference characters *r* and *r'*,) it being understood that the fields may be differently colored or that they may differ in other respects than coloring. For example, the field or stripe *r* may be provided with copying-ink and the field *r'* with record-ink. The front face of the forward flange of the spool N in Fig. 8 is shown as provided with a series of ratchet-teeth S, and cooperating with said ratchet-teeth is a pawl T, pivoted at U to the framework of the machine, the tooth V of said pawl engaging with the ratchet S. It is to be understood that the right-hand ribbon-spool is provided with a crown ratchet-wheel similar to S and that a pawl similar to the pawl T is adapted to cooperate therewith. A series of type-bar hangers are circularly arranged and fixedly supported on a type-ring W, secured to the frame of the machine. Each hanger X pivotally supports a type-bar Y, carrying at its free end a type Z. A link A' connects each of the type-bars with a rock-shaft B', the series of rock-shafts being supported in the base of the machine and extending from front to rear thereof. Each of the rock-shafts is provided with a restoring-spring C' and a finger-key D'. The printing instrumentalities just briefly described are of known construction, and it is not deemed necessary to explain them at greater length. It will be understood that when any finger-key D' is adequately depressed the associate rock-shaft B' will be turned in its bearings, and the type-bar Y through the link A' will be swung upwardly until the type Z cooperates with the under face of the platen of the machine, said platen being diagrammatically shown in Fig. 8 and indicated by the reference character E'.

The operation of the devices hitherto described and explained may be briefly referred to. The platen E' is mounted in a carriage (not shown) of suitable construction,

which is connected in a known manner with the mainspring-case A. The platen-carriage and platen are normally held from movement under the influence of the mainspring by carriage-feeding devices, (not shown in the drawings,) which carriage-feeding devices are operated in a known manner by the operation of the printing instrumentalities in such wise that on the depression of any printing-key D' the carriage-feeding devices coöperate to permit the platen-carriage and platen E' to move the distance of one letter-space in printing direction. During this step-by-step feeding movement of the carriage and the platen the motion of the mainspring case or drum A is transmitted in a manner hereinbefore explained through the train of mechanism comprising the ratchet-wheel C, gears E and G, shaft F', and crank-arm H to the pitman or link I. The movement of the pitman I is transmitted through the arm J to the rock-shaft K and thence through the arms L and yokes or carriers M to the ribbon spools or holders N, the arm J, rock-shaft K, and arm L being, in effect, a bell-crank lever. During the upward movement of the pitman I the ribbon-spools will be moved longitudinally of their shafts or axles O toward the front of the machine, and during the downward movement of the pitman the spools will be moved toward the rear of the machine. In other words, the up-and-down movement of the pitman causes an axial movement of the spools and a transverse reciprocatory movement or crosswise feed of the inking-surfaces of the ribbon R. As the ribbon-spool N moves forwardly along its shaft O the pawl-tooth V, engaging one of the teeth of the ratchet-wheel S, will communicate a rotary movement to the ratchet-wheel and also to the ribbon-spool, thereby imparting a longitudinal movement or lengthwise feed to the ribbon R, which will be gradually unwound from one of the spools and wound upon the other as said spools are moved toward the front of the machine. As the spools are moved toward the rear of the machine the pawl-tooth V will slide downwardly from one tooth to another of the ratchet-wheel and will not affect the latter. It will be understood that the corresponding ratchet-wheel and pawl of the other ribbon-spool operate in a similar manner to impart a longitudinal movement to the ribbon and that means are provided of a known construction for causing the alternate engagement or coöperation between the pawls and their associate ratchet-wheels, so as to reverse the direction of the longitudinal feed of the ribbon. The ribbon mechanism which I have described provides means for thoroughly exhausting the inking-surface by feeding it in two directions at angles to each other, the angle in this instance being substantially a right angle and a double feeding movement occurring simultane-

ously at one time, while at another time only the crosswise feed is operative. I do not desire, however, to be limited to the particular kind or style of ribbon-feeding mechanism which I have illustrated and described.

In Fig. 8 the crank-pin H' is shown as engaged with the lower bearing P' of the pitman I, and the crank-arm H is shown at the limit of its upward movement. With the parts so related the ribbon-spool N will be in the position indicated by the full lines in Fig. 8 and by the dotted-line position nearest the front of the machine in Fig. 4. The actuation of any type-bar Y at this time will bring its type Z against the ribbon R near its rear edge, and the imprint will be made consequently from the field or zone *r*. During the subsequent printing operations the crank-arm H will be rotated downwardly and the ribbon-spools N will be moved longitudinally of their axles O toward the rear of the machine, communicating a crosswise or transverse feed to the ribbon, so that when the crank H has reached the lowest point of its downward swing the spools will be in the rearmost dotted-line position. (Indicated in Fig. 4.) The parts are so proportioned that in this position the types Z will contact with the ribbon near the front edge or limit of the field or zone *r*. During subsequent printing operations the ribbon-spools will again be moved toward the front of the machine and will be rotated at the same time, thereby communicating a longitudinal or lengthwise feed movement to the ribbon and a simultaneous crosswise feeding movement. It will be observed that with the pitman I in the described position—that is, with the crank-pin H' engaged with the lower bearing P'—the ribbon is so controlled that the only portion of the width of it which is in operative or working position is the field or surface *r*, and the contact of the types is confined or restricted to said field *r*, the ribbon moving over or across the printing-point on the platen within the limits defined by the front and back edges of said field *r*. When it is desired to write on the field or surface *r'*, the hand-operated spring member or pitman I is moved downwardly until its spring portion I² yields sufficiently to permit the crank-pin H' to disengage from the lower crank-bearing P' and engage with the upper crank-bearing P. This movement of the pitman causes an axial shift of the ribbon-spools, but without changing the character or mode of operation of the automatic mechanism for communicating axial and rotary movement to the spools. With the parts related as last described the ribbon-spools as the machine is operated will be automatically reciprocated or moved fore and aft of the machine and rotated in a manner similar to that hitherto explained; but the limits of the reciprocatory movement will now be those represented by the dotted-line

positions in Fig. 3, and the contact of the types will be confined to the field or zone r' , the parts of the mechanism being so proportioned and controlled that that part of the width of the ribbon which is in operative position will have as its limits the front and rear edges of the said front zone or field r' .

Of course while I have shown and described the machine as operating with only two different colors and while this form would probably be the most practical, it is obvious that more than two colors could be utilized, in which case the crank H would have to be shortened accordingly and more bearing-places inserted in the spring portion I² of the pitman I. It is further obvious that ribbons or inking-surfaces having characteristics differing in other respects than color may be employed.

Of course I do not wish to be limited to the exact construction here shown, as various modifications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

1. In a ribbon-shifting mechanism for type-writers, a multicolor ribbon, said colors running longitudinally of the ribbon the entire length of the same, spools over which the ribbon runs, said spools mounted and adapted to slide upon transverse shafts, a constantly-revolving crank-arm, a pitman pivoted at its upper end to the wrist-pin of said crank-arm, a rock-shaft adapted to be rocked by the movement of the pitman, mechanism connecting the rock-shaft with the ribbon-spools so that upon each complete revolution of the crank-arm the ribbon-spools will be slid laterally along the transverse shafts backward and forward the distance equal to the width of one of the colors of the ribbon, other wrist-pin bearings formed in the pitman, one bearing for each color upon the ribbon, the wrist-pin adapted to be transferred to another bearing when it is desired to write upon another color ribbon, and means to be operated from the keyboard of the machine for transferring the ribbon from one bearing to the other, as and for the purpose specified.

2. In a ribbon-shifting mechanism for type-writers, a colored ribbon, ribbon-spools over which said ribbon runs, transverse shafts upon which the spools are adapted to slide, a constantly-revolving crank-arm, a pitman composed of two spring side pieces running parallel with one another, said side pieces being bent outward in a semicircle at two points opposite one another so as to form two circular bearings for the wrist-pin of the crank, a rock-shaft, an arm extending outward from the rock-shaft to which the lower end of the pitman is pivoted, a yoke embracing each of the spools, slotted arms pivoted to the yokes at their upper ends, and at their lower ends

to the rock-shaft, a key-lever secured to the rock-shaft, as and for the purpose specified.

3. In combination with a type-writer in which the ribbon is shifted from the carriage-spring, through gearing, a crank-arm, pitman, rock-shaft and yoke, a pitman connecting the revolving crank-arm with the rock-shaft, said pitman being provided with two or more bearing-places for the wrist-pin of the crank-arm, said bearings being formed by the bending outward of the spring-strips composing the pitman so that the wrist-pin may be forced between the spring-strips from one bearing to the other, and a key-lever secured rigidly to the rock-shaft and extending forward to the keyboard, for the purpose of causing the pitman to be raised or lowered so as to transfer the wrist-pin from one bearing to another, as and for the purpose specified.

4. In combination with a ribbon-shifting mechanism, of a type-writer in which the ribbon is shifted from the carriage-spring, through gearing, a crank-arm, pitman, rock-shaft and yoke, a pitman composed of a solid lower portion I' and a spring portion I², said spring portion being formed of a single strip of metal secured at each end to the solid portion, the two side strips of the spring portion extending upward close together and parallel with one another and being bent outward at different points opposite one another so as to form bearings for the wrist-pin, as and for the purpose specified.

5. In a type-writing machine, the combination of means for feeding the ribbon longitudinally, means for automatically reciprocating the ribbon transversely and means for changing the position of the connections between the ribbon and the automatic reciprocating means, to confine the contact of the type to different portions of the width of said ribbon as the same is reciprocated.

6. In a type-writing machine, the combination of a multiplex ribbon, holders for said ribbon, means for rotating said holders, automatic means for reciprocating said holders and means interposed between said holders and the automatic means, for changing the relation between said automatic means and said holders to confine the contact of the type to different portions of the width of said ribbon as the same is reciprocated.

7. In a type-writing machine, the combination of a multiplex ribbon, holders for said ribbon, means for rotating said holders, automatic means for reciprocating said holders, and a spring-controlled connection between said holders and said automatic means, for changing the relations between the same to confine the contact of the type to different portions of the width of said ribbon as the same is reciprocated.

8. In a type-writing machine, the combination of means for automatically feeding a

ribbon in two directions at substantially right angles to each other, and hand-actuated means for changing the relative disposition of the parts of said feeding means, so that limits of movements in one direction will be altered and different limited portions of the ribbon may be employed.

9. In a type-writing machine, the combination of a ribbon that is divided into fields or sections, a carrier therefor, automatically-operated means for moving said carrier so as to move different portions of the field or section of ribbon which is in the operative position past the printing-center, and hand-operated means for changing the relative positions of the parts of said automatically-operated parts so that any one of the various sections may be moved to the operative positions.

10. In a type-writing machine, the combination of a ribbon having fields of different characteristics, means for automatically moving the ribbon longitudinally, means for automatically moving the ribbon transversely, and means for controlling the ribbon so that as said ribbon is automatically moved the contact of the types is confined to whatever selected field of the ribbon may be in use.

11. In a type-writing machine, the combination of a ribbon having fields of different characteristics, means for automatically moving the ribbon longitudinally, means for automatically moving the ribbon transversely, and means for controlling the ribbon so that during the automatic longitudinal movement of the ribbon the contact of the types is confined to whatever ribbon-field is selected for use.

12. In a type-writing machine, the combination of a ribbon having fields of different characteristics, means for automatically feeding the ribbon longitudinally, means for automatically reciprocating the ribbon transversely, and means for shifting the ribbon so that as said ribbon is automatically fed the contact of the types is confined to whatever field of the ribbon may be selected.

13. In a type-writing machine, the combination of printing instrumentalities, a ribbon, means for feeding the ribbon longitudinally, means for automatically reciprocating the ribbon transversely, connections between said ribbon and said reciprocating means, and means for altering said connections so that the contact field of the printing instrumentalities may be restricted at pleasure to limited portions of the width of the ribbon as it moves over the printing-point during the operation of the machine.

14. In a type-writing machine, the combination of printing instrumentalities, a ribbon having fields of different characteristics, holders or spools for said ribbon, means for rotating said holders or spools, automatic means for reciprocating said holders or spools, and means for adjusting said automatic

means so that the action of the printing instrumentalities may be confined to any desired field of the ribbon as the latter moves over the printing-point during the operation of the machine.

15. In a type-writing machine, the combination of means for automatically feeding the ribbon in two directions, one at an angle to the other, and hand-actuated means for changing the relations of the parts of said automatic feeding means so that the limits of movement in one direction will be altered and different limited portions of the ribbon may be employed.

16. In a type-writing machine, the combination of means for automatically feeding the ribbon in two directions simultaneously, and hand-actuated means for changing the relations of the parts of said feeding means so that the limits of movement in one direction will be altered and different limited portions of the ribbon may be employed.

17. In a type-writing machine, the combination of a ribbon having fields of different characteristics, a carrier therefor, automatic means operative on said carrier to bring to the printing-point different portions of whatever field of the ribbon may be in use, and hand-actuated means operative on said automatic means to bring any desired field of the ribbon into use.

18. In a type-writing machine, the combination of printing instrumentalities, inking-surfaces having different characteristics, means for automatically moving said inking-surfaces in one direction, means for automatically moving said inking-surfaces in another direction at an angle to the first direction, and means for moving any surface to a position to cooperate with said printing instrumentalities, said surface while in said cooperating position being automatically movable.

19. In a type-writing machine, the combination of inking-surfaces having different characteristics, means for moving any surface to operative position, and means for automatically moving said inking-surfaces in two directions at substantially right angles to each other, and for effecting an automatic movement of that inking-surface which is in operative position.

20. In a type-writing machine, the combination of inking-surfaces having different characteristics, means for automatically moving said inking-surfaces in one direction, means for automatically moving said inking-surfaces in another direction at an angle to the first direction, and means for moving any surface to operative position, the automatic movement of the inking-surfaces being effected when any field is in operative position.

21. In a type-writing machine, the combination of inking-surfaces having different characteristics, means for moving any surface to operative position, and means for au-

tomatically moving said inking-surfaces in two directions at angles to each other and so that only that surface or field which is in operative position will be presented to the action of the types and the inking-surfaces will be automatically moved when any field is in operative position.

22. In a type-writing machine, the combination of inking-surfaces having different characteristics, means for automatically moving said inking-surfaces in two directions at substantially right angles to each other, and means for moving any surface or field to operative position without affecting the said automatic movement of the surfaces.

23. In a type-writing machine, the combination of inking-surfaces of different colors, means for shifting said inking-surfaces so that any desired color may be moved to the printing-point, and means for automatically feeding the inking-surfaces in two directions and for automatically moving said surfaces when any color is at the printing-point.

24. In a type-writing machine, the combination of two or more inking-surfaces of different colors, with means for shifting said inking-surfaces so that any desired color may be moved to the printing-point, and means for automatically moving the inking-surfaces in two directions at substantially right angles to each other and for automatically moving said surfaces when any inking-surface is at the printing-point.

25. In a type-writing machine, the combination of a multicolored inking-ribbon having a plurality of color-fields, means for positioning said ribbon so that any one of the color-fields may be moved to the printing-point, and means for automatically moving said ribbon longitudinally and transversely while any desired field is at the printing-point.

26. In a type-writing machine, the combination of a ribbon having fields of different characteristics, means for positioning the ribbon so that any desired field will receive the impact of the types, means for automatically moving the ribbon longitudinally and transversely and so that only that field desired to be impacted by the types will be fed over the printing-point.

27. In a type-writing machine, the combination of a ribbon having fields of different characteristics, means for automatically moving the ribbon so that whichever field it is desired to use will be moved longitudinally and transversely over the printing-point, and independent means for changing the position of said fields relative to the printing-point.

28. In a type-writing machine, the combination of a ribbon having fields of different characteristics, ribbon-spools for holding the ribbon, means for automatically shifting said ribbon-spools axially and for revolving them, and independent means for effecting an axial shift of the spools to bring any field of the

ribbon into the path of the types without affecting the operation of said automatic shifting means.

29. In a type-writing machine, the combination of a ribbon having fields of different characteristics, ribbon-spools on which said ribbon is wound, and means for moving said spools axially and for rotating them and which limit the axial movement of the spools so that any one field of the ribbon will be presented to the action of the types.

30. In a type-writing machine, the combination of a ribbon having fields of different characteristics, ribbon-spools on which said ribbon is mounted, means for revolving said spools while shifting them axially, and means to limit the axial movement of the spools to any field of the ribbon without interfering with the revolution of said spools.

31. In a type-writing machine, the combination of a ribbon, ribbon-spools on which said ribbon is wound, means for automatically actuating said ribbon-spools, and hand-operated mechanism for changing the relation of the parts of said automatic actuating mechanism so that any one of a plurality of fields into which the ribbon is divided will be presented to the action of the types and be automatically fed when so presented.

32. In a type-writing machine, the combination of an automatically-reciprocated member, a ribbon-carrier operated thereby, and means for changing the relations between said carrier and said member, whereby different portions in the width of the ribbon may be presented at the printing-point and automatically fed thereover.

33. In a type-writing machine, the combination of an inking-ribbon having fields of different characteristics, ribbon-spools, means for automatically actuating said ribbon-spools, and hand-actuated means for changing the relative disposition of the parts of said actuating means so that any one of the ribbon-fields may be moved to operative position and the feed of the ribbon may be at the same time so restricted that only the last-named ribbon-field will be presented to the action of the types.

34. In a type-writing machine, the combination of an inking-ribbon divided longitudinally into fields of different characteristics, means for automatically feeding the ribbon lengthwise, mechanism for automatically feeding the ribbon transversely, and hand-operated means for changing the relation between the parts of said mechanism so that any one of the ribbon-fields may be presented at the printing-point and automatically fed thereover.

35. In a type-writing machine, the combination of a ribbon divided longitudinally into fields having different characteristics, ribbon-spools, means for automatically revolving said spools, means for automatically

moving said spools axially, and hand-operated means for changing the relation between the parts of said mechanism so that any one of the different ribbon-fields may be caused to cooperate with the types as the ribbon-spools are automatically revolved.

36. In a type-writing machine, the combination of a ribbon divided longitudinally into fields having different characteristics, ribbon-spools upon which said ribbon is wound, spool-shafts upon which said spools are mounted, a revoluble crank-arm connected with one of said spool-shafts, a pitman connected with said crank-arm, a bell-crank lever having one arm connected with said pitman and the other arm with one of said ribbon-spools, and means for varying the distance between the points of connection of said crank-arm with said pitman and of said bell-crank lever with said pitman.

37. In a type-writing machine containing an ink-ribbon having fields of different characteristics, the combination with the carriage-operating mechanism of ribbon-feeding mechanism actuated thereby, said ribbon-feeding

mechanism including means for moving the ribbon transversely, and of means for so regulating the relations between the ribbon and its feed mechanism as to render the latter operative to feed the ribbon at will with one field only of the ribbon exposed to the action of the types, the exposed field being whichever may be desired.

38. In a type-writing machine containing ink-ribbon having fields of different characteristics, the combination of ribbon shifting and holding means to render the types operative indefinitely on each of said fields of the ribbon, automatic ribbon-feed mechanism for feeding the ribbon longitudinally on whichever field thereof the types operate, and automatic mechanism for reciprocating the ribbon transversely.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

WILLIAM L. COOKE.

Witnesses:

ALLAN EPES,

L. B. MANVILLE.