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Patented Dec. 27, 1898.

G. B. WEBB.
TYPE WRITING MACHINE.

(Application filed Jan. 24, 1898.)

(No Model.)

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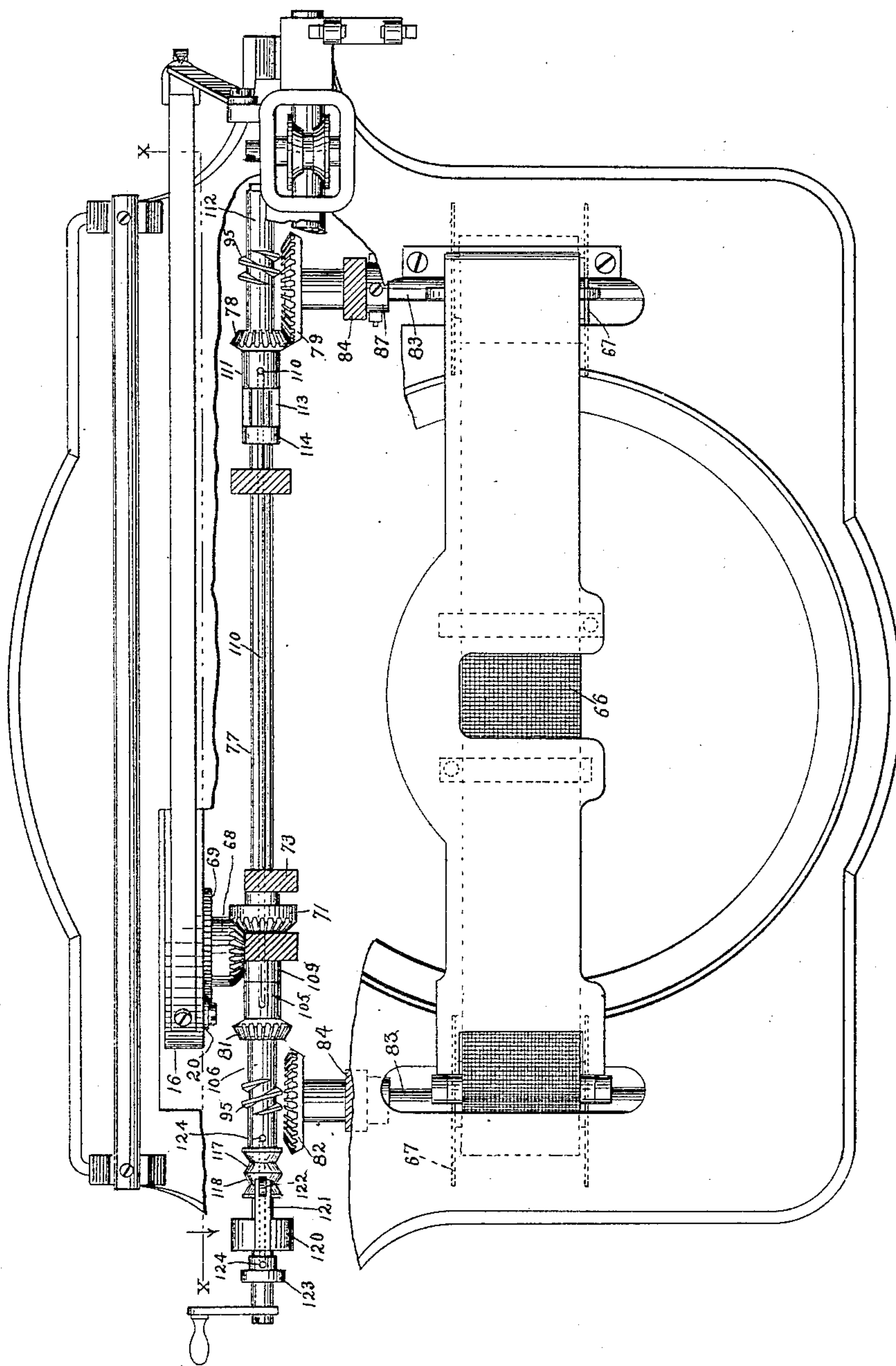


Fig. 6.

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TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 616,511, dated December 27, 1898.

Original application filed February 8, 1897, Serial No. 622,407. Divided and this application filed January 24, 1898. Serial No. 667,703. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. WEBB, a citizen of the United States, and a resident of Westfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This case is a division of my application filed February 8, 1897, Serial No. 622,407, upon which Letters Patent No. 559,428 were issued on February 22, 1898, and relates to the ribbon-reversing mechanism.

While the main objects of my invention are to improve the construction and operation of what is known as the "Remington No. 6 machine," it will nevertheless be understood that my improvements may be embodied in other forms or types of machines.

My improvements consist in the various features of construction and combinations of devices hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a vertical cross-section, taken at the line *x x* of Fig. 6, of a portion of a type-writing machine, showing my improvements relating to the ribbon-reversing mechanism. Fig. 2 is a sectional rear elevation of the driving-shaft and its appurtenances detached. Fig. 3 is a vertical section of a part of the ribbon moving and reversing mechanisms, taken at the line *o o* of Fig. 1. Fig. 4 is a cross-section on the line *p p* of Fig. 1. Fig. 5 is a cross-section on the line *q q* of Fig. 1. Fig. 6 is a plan view of a portion of the machine, showing the entire ribbon mechanism, the top plate of the machine being broken away to show the relationship of the parts.

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

The inking-ribbon 66 is moved lengthwise, or from one spool 67 to the other, in a manner somewhat similar to the Remington machine. In the present case, however, novel means are provided, which will now be described.

Upon the fixed pivot or stud of the spring-

drum 16 is mounted a bevel-gear 68 and a ratchet-wheel 69, which are united to turn together. A pawl 20, pivoted on the spring-drum, takes into the said ratchet-wheel and turns it and the bevel-gear during the forward movement of the carriage, but slides idly over said gear during the return movement of the carriage. The said bevel-gear 68 meshes with another bevel or miter gear 71, formed on a sleeve which is fast on a non-sliding shaft 77 and which fills the space between the forks of a hanger or bracket 73. At near the right-hand end of the long power-shaft 77 (considered from the front of the machine) is a bevel-pinion 78, which is adapted to engage with and disengage from a larger bevel-gear 79 on the right-hand ribbon-spool shaft, and at near the left-hand end of said long shaft 77 is a like bevel-pinion 81, adapted to engage with and disengage from a like larger bevel-gear 82 on the left-hand ribbon-spool shaft 83. By means of these two pairs of bevel-gears either ribbon-spool shaft may be rotated by the power transmitted by the spring driving-drum, and hence the ribbon may be moved longitudinally by winding upon either spool in one direction or another, according to which pair of gears is in engagement. Each ribbon-spool shaft is adapted to turn in suitable bearings or supports 84, depending from the top plate, and on each shaft is mounted to rotate therewith a ribbon spool or reel 67.

Each spool-body or core is formed with a longitudinal slot 85, and the rear head or flange of each spool is formed with an opening or cut-away 86 in line with said slot, as shown more particularly at Figs. 1 and 3. A collar 87 is secured by a set-screw to the spool-shaft at or near the rear bearing 84 thereof, and on this collar is pivoted at 88 a lever or arm 89, which is heavy or weighted at 90 and which extends through the opening 86 in the flange and into the longitudinal slot 85 in the body of the spool, which slot is parallel with the spool-axle and is of a depth sufficient to accommodate the said weighted arm. A hole or perforation 91 is formed centrally in the rear portion of the spool shaft or axle and

connects with a slot or cut-away 92 in the spool-shaft. In this hole 91 works a pin 93, having one end 94 bent outwardly or laterally to engage with an aperture in the weighted arm or lever 89. That portion of the pin which is arranged within the hole at the center of the shaft extends rearwardly to about the end of the shaft when the weighted arm or lever is within the slot in the spool. Opposite each end of the spool-shaft and on the long power-shaft 77 is a worm 95, adapted to coact with the pin 93 in the spool-shaft, as will be presently described. The beveled pinion 81 is formed integral with a hub 105 on its inner side and with a sleeve 106 on its outside, and the power-shaft passes through said beveled pinion and hub and sleeve. The sleeve carries the left-hand worm 95, (but shown on the right-hand side in the drawings, because the view is taken from the rear of the machine,) and the hub is slotted longitudinally at 107 on diametrically opposite sides to receive two forks or projections 108, extending outwardly from a collar 109, which is fixed upon the power-shaft. The power-shaft is slotted or grooved longitudinally for nearly its entire length, and in said groove for a portion of its length runs a slender wire rod 110, which at its left-hand end is bent laterally or radially and connects with the hub 105, while at the right-hand end the said wire rod is likewise provided with a radial bend, which engages with the hub 111 of the right-hand gear 78, which is likewise formed integral with the said hub and with a sleeve 112, bearing a worm 95, said hub 111 being also slotted on opposite sides, as at 107, to cooperate with similar forks or projections 113, extending outwardly from a collar 114, secured by a set-screw on the power-shaft. The left-hand sleeve 106 is formed or provided at its outer end with two circular recesses or grooves 115 and 116 and two intermediate adjacent oppositely-inclined surfaces 117 and 118. Beyond said sleeve and near the left-hand end of the power-shaft and attached to the latter by a set-screw 119 is a collar 120, which is provided with two spring-actuated pivoted arms or levers 121, arranged diametrically opposite each other, and at the inner free end of each of said levers is mounted a small antifriction roller or bearer 122, adapted to the circular notches or grooves 115 and 116 referred to.

Outside of the collar bearing the arms 121 is still another collar or hand piece 123, which is loosely mounted upon the power-shaft, and said collar is connected by a wire 124 to the left-hand sleeve 106. All of the parts mounted upon the shaft 77 for longitudinal movement turn always with the shaft.

When the ribbon has been entirely unwound from either spool and the slot 85 therein is turned to or comes on the under side of the spool-shaft, the weighted arm or lever 89 falls out of said slot, and the motion of said lever is communicated to the sliding pin 93, which normally stands about flush with the

end of the spool-shaft, and said pin is projected slightly beyond the same and into engagement with its associated worm 95 on the power-shaft, which is constantly rotated during the forward movement of the paper-carriage. By the said engagement of the pin and worm the spool-driving gears on said shaft are moved endwise independently of said shaft the required distance to disengage one set of the spool-driving gears and engage the other set. In other words, the two gears which were operating together to wind the ribbon upon their associated spool are separated and the other two gears, which were out of engagement at this time, are automatically brought into mesh by the endwise sliding of said gears and their sleeves due to the cooperation of the pin and the worm, so as to thereafter cause their associated spool to become the winding-spool. Thus the longitudinal movement or travel of the ribbon is automatically reversed. Thus automatic reversal takes place every time either paying-out spool becomes exhausted and when the weighted arm or lever thereof may drop or descend and communicate its motion to the worm-engaging pin. It will of course be understood that immediately the reversing action takes place and the ribbon commences to wind upon the empty spool the weighted arm or lever, being attached to the ribbon-spool shaft, ascends as said shaft and its spool are rotated, and when the weight has been carried up past the horizontal center of said shaft it falls by gravity into the slot 85 in the spool, and before the said lever can travel around on the opposite side of said shaft to a position where it might again fall out of said slot the first coil or fold of the ribbon passes over said slot, and this holds the lever therein. Hence by the wrapping of the ribbon over the slot the lever is retained securely in the slot and out of operative position during the charging or rewinding of its spool. While a weighted arm or lever is preferred, or an arm or lever of such weight as will enable it to readily and quickly drop out of and into the slot in the spool, as required, it will be understood that a non-weighted arm or lever provided with a spring for drawing the arm or lever out of the slot may be employed instead; but in this case the arm or lever would be returned to the slot not by gravity or by the spring, but by the first coil or fold of the ribbon, whose tension or strain would be sufficient to overcome the light spring required.

Assuming that the pinion 78 is in engagement with its spool-shaft gear to turn its associated ribbon-spool and wind the ribbon thereupon when the opposite spool has discharged all of its ribbon, the weighted arm or lever 89 causes its sliding pin 91 to engage with the left-hand worm 95, and by such engagement the said worm is moved toward the left, thereby forcing its sleeve 106 and pinion 81 and double incline in the same direction, and owing to the connection between

the left-hand sleeve 106 and the right-hand sleeve 112 by the wire 110 the beveled gear 78 is simultaneously moved in the same direction and the engagement of the pinions 5 and gears is reversed. During this shifting movement of the parts the spring-pressed rollers 122, which remain relatively stationary, are forced apart by the outermost incline or cam 118, and after the centers of the rollers have passed by the highest portion of the incline the said rollers pressing on the incline 117 cause the sleeves and their adjuncts or connections to move farther toward the left and sufficiently to complete the shifting movement and bring the left-hand pinion 81 positively and fully into engagement with the gear on its associated ribbon-spool shaft, so that the left-hand spool may thereafter become the winding-spool. When 20 this spool is full, the reverse action automatically takes place again. At the time the rollers 122 complete the shifting movement of the sleeve the pin 93 has passed out of engagement with its cooperating worm. The two inclines and the spring-pressed arms, with their rollers, are so arranged and operate as that the pinions and their connecting devices may be moved endwise by means of the pins and worms before described with 30 very little friction and under an exceedingly slight force, and at the same time they hold the parts in gear or proper working relation after reversing action. The loose collar 123, which is connected to the sleeve 112 by the wire 124, is provided more especially to enable the shifting movements to be effected by hand instead of automatically, if desired, it being simply necessary to move said collar endwise. The shaft may be rotated by the 40 crank-handle shown when it may be desired to wind the ribbon quickly from one spool to another or where a change of ribbons is desired.

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

1. In a type-writing machine and in a ribbon-reversing mechanism, the combination of a power-shaft, gears and worms mounted to rotate with said shaft and also to slide endwise thereon, spool-shafts carrying gears and spools and also pins which are adapted, when the ribbon is unwound, to be projected into engagement with said worms to cause a shifting of the gears on the power-shaft, whereby 55 the ribbon is caused to be run in reverse directions.

2. In a type-writing machine and in a ribbon-reversing mechanism, the combination of a ribbon, a pair of ribbon-spools, a pair of ribbon-spool shafts, a power-shaft, a pair of gears and a pair of worms connected together to slide endwise on said shaft and also to rotate with said shaft, the gears on the ribbon-spool shafts being adapted to be alternately 65 driven by the gears on the power-shaft, a pin or device connected to slide endwise of each spool-shaft and engage with its associated

worm, means connected with said pin or device and controlled by the folds of the ribbon for moving said pin or device when the ribbon 70 has been discharged from its spool.

3. In a type-writing machine and in a ribbon-reversing mechanism, the combination of a ribbon, a ribbon-spool, a ribbon-spool shaft, a gear thereon, a power-shaft, a worm, and a 75 gear on the power-shaft adapted to rotate therewith and also to slide endwise thereon, a pin on the ribbon-spool shaft, and a lever or arm connected to said pin and controlled by the folds or coils of the ribbon in such 80 manner that said pin is normally held out of engagement with said worm and in such manner that when the said arm or lever escapes from the control of said ribbon it operates to move the said pin into engagement with the 85 said worm.

4. In a type-writing machine and in a ribbon-reversing mechanism, the combination of a ribbon, a ribbon-spool, a ribbon-spool gear, a power-shaft, a gear and a worm connected 90 to revolve with said shaft and also to slide endwise thereon, and a worm-actuating pin controlled by said ribbon for causing the worm and the gear to slide endwise on said shaft.

5. In a type-writing machine and in a ribbon-reversing mechanism, the combination of 95 a ribbon, a ribbon-spool, a ribbon-spool gear, a power-shaft, a gear connected to revolve with said shaft and also to slide endwise thereon independently, a device connected with 100 said gear and comprising two circular grooves and two oppositely-inclined surfaces intermediate said grooves, and a spring-pressed arm or lever acting on said device.

6. In a type-writing machine and in a ribbon-reversing mechanism, the combination of 105 a ribbon, a ribbon-spool, a ribbon-spool gear, a power-shaft, a sleeve mounted on said shaft and carrying a gear and also a device comprising two circular grooves, two oppositely-inclined surfaces intermediate said grooves, 110 and a spring-pressed lever or levers acting thereon.

7. In a type-writing machine and in a ribbon-reversing mechanism, the combination of 115 a ribbon, a ribbon-spool, a ribbon-spool shaft, a gear thereon, a pin on said shaft, a power-shaft, a sleeve mounted on said shaft and carrying a gear and a worm and a doubly-grooved collar having intermediate inclined 120 surfaces, and a spring-pressed lever or levers also mounted on said power-shaft.

8. In a type-writing machine and in a ribbon-reversing mechanism, the combination with the ribbon and the spools and their gears 125 and with the actuating-pins, of a power-shaft, a pair of sleeves thereon each provided with a gear and a worm and means for connecting said sleeves together whereby they may be moved simultaneously on said shaft when 130 either of the pins is thrown into action.

9. In a type-writing machine and in a ribbon-reversing mechanism, the combination with the ribbon and the spools and their gears

and with the actuating-pins, of a power-shaft, a pair of sleeves thereon each provided with a gear and a worm, means for connecting said sleeves together whereby they may be moved
5 simultaneously on said shaft when either of the pins is thrown into action, and spring-acted wedging means for completing the shifting movements.

10. In a type-writing machine and in a ribbon-reversing mechanism, the combination with the ribbon and the spools and their gears, and with the actuating-pins, of a power-shaft, a pair of sleeves thereon each provided with a gear and a worm, means for connecting said
15 sleeves together whereby they may be moved simultaneously on said shaft when either of the pins is thrown into action, a collar on one of said sleeves having a pair of grooves and two oppositely-inclined surfaces intermediate
20 said grooves, and a spring-pressed lever or levers on said shaft cooperating with said collar or doubly-grooved and inclined sleeve for completing the switching action.

11. In a type-writing machine and in a ribbon-reversing mechanism, the combination with a ribbon and the spools and their gears, of a power-shaft, a pair of gears sleeved thereon and connected together by an intermediate wire rod, so that said gears may rotate with
30 said shaft and also slide together endwise thereon, and the oppositely-arranged inclines and spring-pressed lever or levers.

12. In a type-writing machine and in a ribbon-reversing mechanism, the combination of
35 a ribbon, ribbon-spools, ribbon-spool shafts having gears, the sliding pins and the actu-

ating-levers, the power-shaft, two sleeves thereon, a connecting wire or rod, a gear and worm on each sleeve, and spring mechanism for completing the shifting action of said
40 sleeves.

13. The combination, in a ribbon-reversing mechanism of a ribbon, spool-gearing, a power-shaft having a pair of connected sleeves each provided with a driving-gear and a handpiece
45 mounted on said shaft and connected to said sleeves for moving them endwise.

14. The combination, in a ribbon-reversing mechanism, of a ribbon, spool-gearing, a power-shaft having a pair of connected sleeves each
50 provided with a driving-gear, a handpiece mounted on said shaft and connected to said sleeves for moving them endwise, and a spring-acting mechanism for holding said sleeves and their gears in either of their shifted po-
55 sitions.

15. In a type-writing machine and in a ribbon-reversing mechanism, the combination of a ribbon, spool-gearing, a power-shaft, a pair of connected sleeves each having a driving-
60 gear and one having oppositely-inclined surfaces, and a collar secured to said shaft and having one or more spring-pressed levers to cooperate with said inclines.

Signed at New York city, in the county of
New York and State of New York, this 22d
day of January, A. D. 1898.

GEORGE B. WEBB.

Witnesses:

ETHEL WELLS,
K. V. DONOVAN.