J. C. McLAUGHLIN.

TYPE WRITING MACHINE.

APPLICATION FILED SEPT. 25, 1911.

1,140,273.

Patented May 18, 1915.

2 SHEETS—SHEET 1.

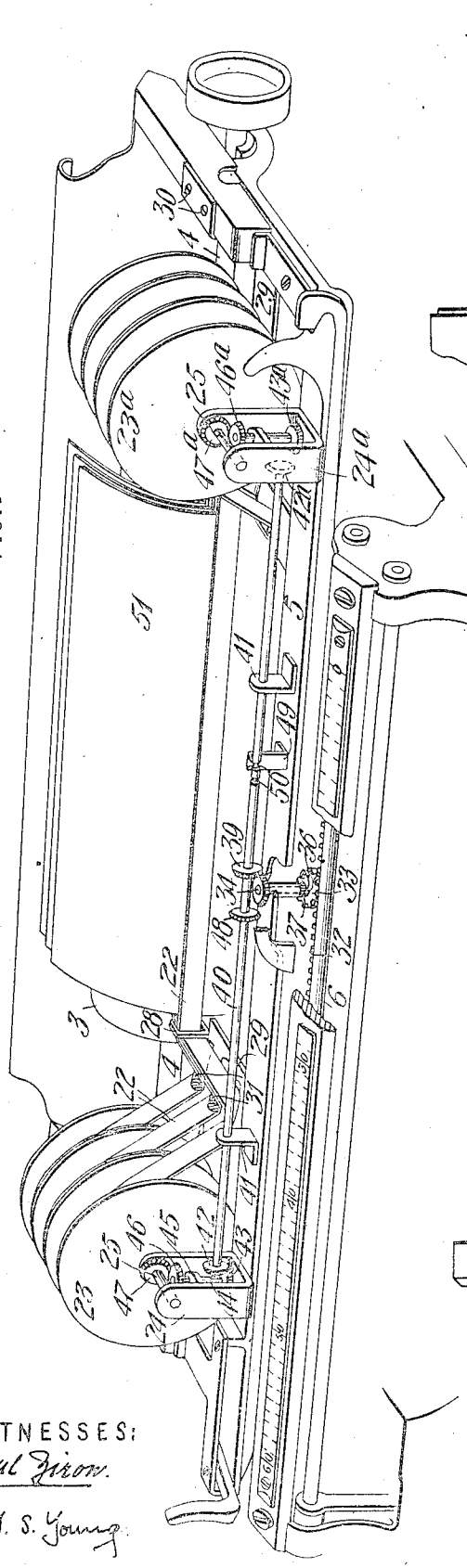


FIG. 1.

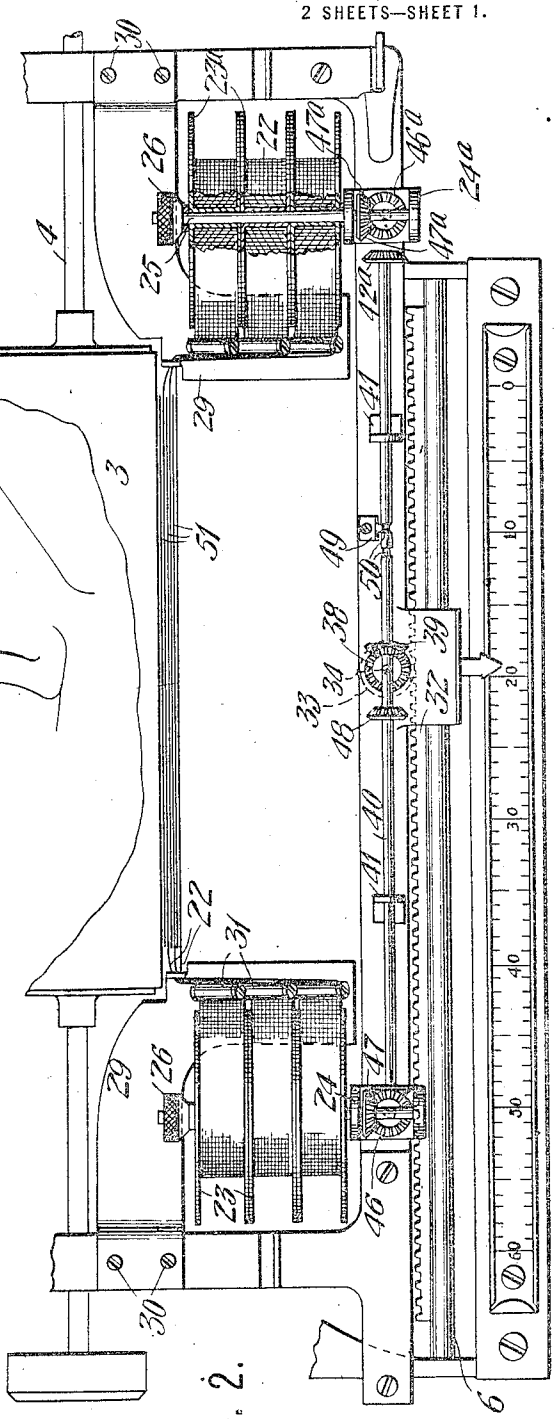


FIG. 2.

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2 SHEETS—SHEET 2.

FIG. 3.

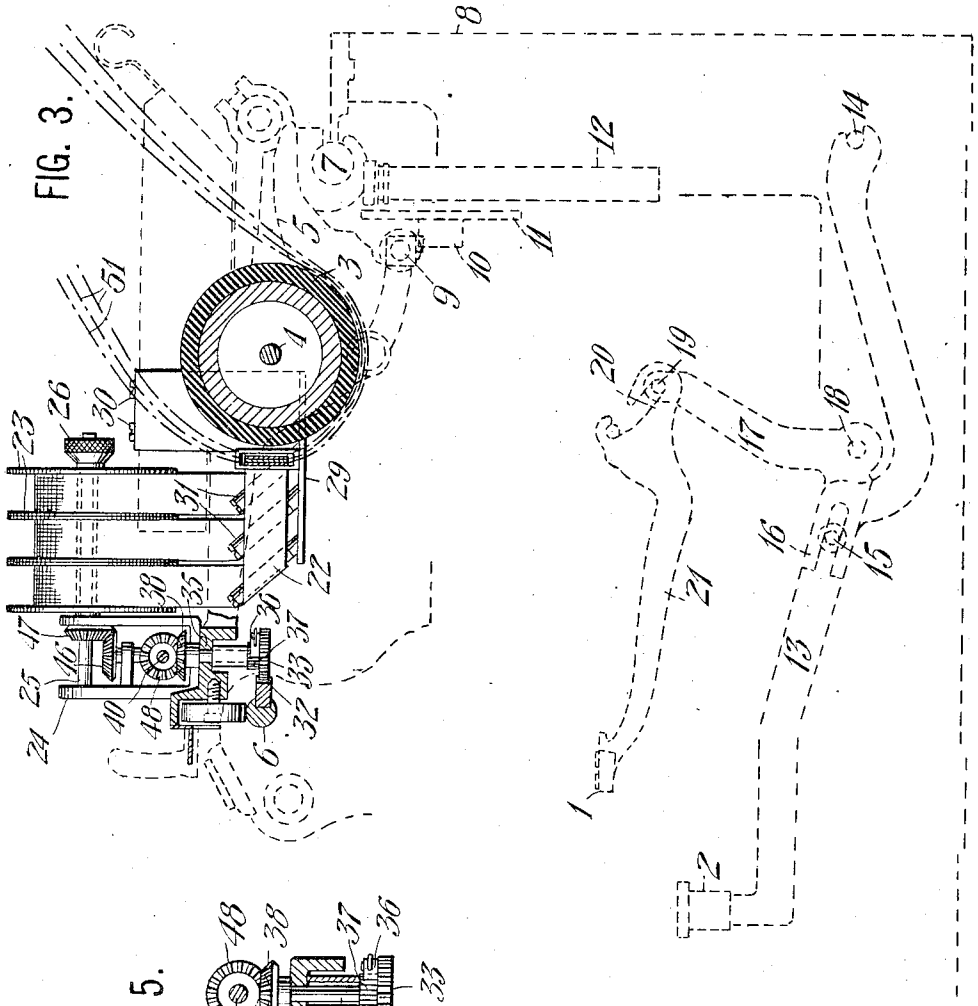


FIG. 5.

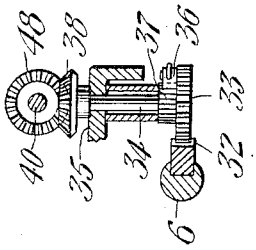
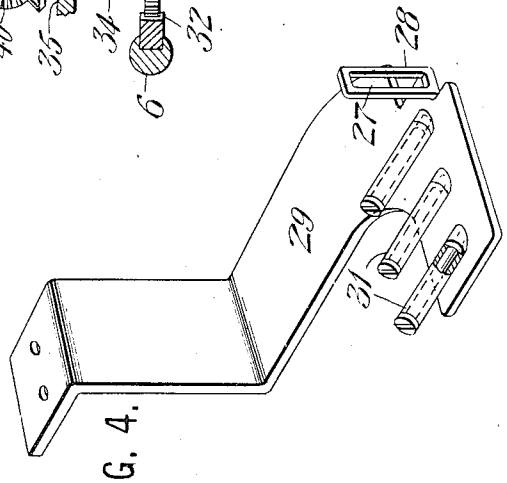


FIG. 4.



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UNITED STATES PATENT OFFICE.

JOHN C. McLAUGHLIN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,140,273. Specification of Letters Patent. Patented May 18, 1915.

Application filed September 25, 1911. Serial No. 651,029.

To all whom it may concern:

Be it known that I, JOHN C. McLAUGHLIN, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to ribbon mechanism of typewriting machines, and particularly to machines wherein several ink ribbons are used, between which sheets or webs are threaded for producing several inked copies simultaneously.

The object of my invention is to provide improved, simple, and convenient means, readily applicable to existing machines, for this purpose.

Heretofore, as shown in the patent to H. S. McCormack, No. 972706, the ribbon spools have been geared to the platen axle, and the ribbon was wound to a small extent only at the end of each line, when line spacing.

A feature of my invention is the provision of means whereby the ribbons will be wound on the spools as the carriage travels in one direction, to permit the types to strike at successive adjacent points along the entire ribbon, as the writing progresses, to prevent unequal wear.

In carrying out the preferred form of my invention, a portion of each of the ribbons extends along the printing line of the platen, between which sheets or webs may be threaded, and sets of spools, with proper guide rolls for the ribbons are mounted on the carriage. A drive shaft extending from spool to spool on the carriage has a gear to mesh with a rack fixed to the machine frame. Said drive shaft is shiftable so that it can be geared to either spool set for reversing the direction of winding the ribbons. A back-check pawl coöperates with said gear, whereby, when the carriage is fed the ribbon spools are not affected, while upon return of the carriage the ribbons are wound to present a new portion for writing on the next line.

Other objects and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a general perspective of the improvements. Fig. 2 is a plan of Fig. 1. Fig. 3 shows a side elevation of Fig. 2 with the rest of the typewriting machine indicated diagrammatically. Fig. 4 is a perspective detail of the ribbon guide plate with the guide rollers thereon. Fig. 5 shows a side elevation of the mechanism for feeding the ribbons.

Types 1 operated by keys 2 strike against the platen 3, mounted by its axle 4 upon the carriage 5, which travels on rails 6 and 7 fixed on machine frame 8. The carriage is fed by a rack 9 thereon meshing with a gear 10, rotated by an escapement 11 which is actuated by a spring barrel 12 at the type strokes. Upon depression of key 2, the key lever 13 fulcrumed at 14, is rocked, causing a pin 15 therein to engage a slotted arm 16 of lever 17, pivoted at 18. The lever 17 is thereby swung toward the front of the machine and a pin 19 thereon engages the slotted portion 20 of the type bar 21 on which the type 1 is fixed, whereby the types are swung upward to strike the platen 1. The aforesaid parts are all common on the Underwood typewriting machine in connection with which my invention is illustrated.

Ribbons 22 are wound upon spools 23, 23^a which are mounted on supports 24, 24^a by means of axles 25, at either end of the machine. The supports 24, 24^a are fixed to the front side of the carriage 5 and nuts 26 threaded on axles 25 maintain the spools against longitudinal displacement. A portion of the ribbons 22 extends along the printing line of the platen, and the ribbons pass through guide slots 27 of projections 28, formed on ribbon guide plates 29, fixed at either end of carriage 5, by screws 30. The ribbons pass from said slots around guide rolls 31, mounted on plate 29, and then wind over the spools 23, 23^a.

As the carriage is returned, a rack 32 fixed on rail 6 of the machine frame 8 meshes with a gear 33, mounted loosely on a counter-shaft 34, which runs in a bearing 35 upon the carriage 5. A pawl 36 on gear 33 engages a ratchet 37 having teeth cut to engage the pawl 36 in one direction but to swing the pawl out of engagement in the other in the ordinary manner. Said ratchet is fixed on counter-shaft 34, whereby both are rotated. Said counter-shaft carries a bevel gear 38 which meshes with a gear 39, fixed on a shaft 40, which is mounted upon supports 41 fixed to the carriage 5, causing shaft 40 to rotate. A gear 42 on shaft 40 meshes with a

gear 43 fixed on a counter-shaft 44, which runs in a bracket 45 depending from the spool support 24, and a bevel gear 46 on counter-shaft 44 meshes with a gear 47 fixed upon spool axle 25, whereby spools 23 are rotated and the ribbons wound thereon. It will be observed that this construction brings the rack 32, which drives the ribbons, in a position where it is shielded from dust, and is concealed behind the framework of the machine so that it is out of the way, and yet is easily accessible if it requires to be cleaned.

To reverse the ribbons, shaft 40 is shifted longitudinally, so that a gear 48 thereon meshes with gear 38, whereby, by means of a similar gear train 42^a, 43^a, 46^a, and 47^a, spools 23^a are rotated and the ribbons wound thereover. A spring detent 49 fixed upon carriage 5 engages either groove 50 of drive shaft 40 to lock it against longitudinal displacement when shifted to rotate either set of spools.

Sheets or webs 51 are inserted for writing by being threaded between the ribbons as shown in Figs. 1 and 3, the ribbons having ink on one side only to prevent impressions on the back side of the sheets. As the carriage 5 is fed, the pawl 36 allows the gear 33 to rotate loosely, so that the ribbon mechanism is not affected, the ribbon advances bodily with the platen, and the types strike at successive points therealong. When the carriage is returned the back-check pawl 36 causes the ribbon mechanism to wind the ribbons and present a new portion thereof for writing the next line.

It will be evident that the pawl 36 and ratchet 37 may be reversed to cause the ribbons to feed at every type stroke and to remain idle when the carriage is returned.

Variations may be resorted to within the scope of the invention and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a carriage, sets of parallel ribbon spools mounted on each end of said carriage, ribbons extending between spools on opposite ends of the carriage, means whereby said ribbons are brought into vertical parallelism, mechanism between the said spools adapted to wind one or the other of said sets of spools, and connections between said mechanism and the frame whereby on movement of the carriage one or the other sets of spools may be wound.

2. In a front-strike typewriting machine, the combination with a traveling carriage, of a rail at the front of the machine on which said carriage is carried, a rack on said rail, a pinion on said carriage arranged to mesh with said rack, ribbon spools journaled on horizontal shafts on said carriage, there being one shaft at each end of said carriage, and a shaft extending between said shafts, arranged to be driven from said pinion, and to drive said shafts.

3. In a typewriting machine, the combination with a traveling carriage, of a plurality of ribbon spools on said carriage at each end thereof, a horizontal shaft at each end of said carriage on which said spools are journaled, means for locking said spools to said shaft, guides for turning said ribbons to a vertical position, and a rack on the frame of the machine for driving said shafts.

4. In a front-strike typewriting machine, the combination with a traveling carriage, of a rail adjacent the front of the machine on which said carriage travels, a ribbon mechanism, and a rack on said rail to drive said ribbon mechanism.

5. In a front-strike typewriting machine, the combination with a machine frame and carriage, of ribbons extending along the printing line for writing several copies simultaneously, spools for said ribbons mounted with their axes substantially horizontal on said carriage, means to guide the ribbons into vertical planes in front of the platen, a rack on said frame, and mechanism extending between said spools actuated by said rack to wind said ribbons by movement of the carriage.

6. In a front-strike typewriting machine, the combination with a machine frame and carriage, of ribbons having a portion extending along the printing line for writing several inked copies simultaneously, spools for said ribbons mounted on said carriage, a rack on said frame, and mechanism extending between said spools actuated by said rack to wind said ribbons when said carriage is returned whereby a new ribbon portion is presented for the next line of writing, said mechanism being ineffective to rotate the spools when the carriage is fed.

7. In a front-strike typewriting machine, the combination with a machine frame and carriage, of ribbons having a portion extending along the printing line for writing several inked copies simultaneously, spools for said ribbons mounted on said carriage, a rack on said frame, mechanism extending between said spools actuated by said rack to wind said ribbons when said carriage is returned whereby a new ribbon portion is presented for the next line of writing, said mechanism being ineffective when the carriage is fed, and means to reverse said ribbons.

8. In a front-strike typewriting machine, the combination with a carriage, of ribbons extending in vertical planes along the printing line for writing several inked copies simultaneously, spools for said ribbons on horizontal axes, means to guide the ribbons to upright positions, and mechanism ex-

tending between said spools to wind said ribbons by movement of said carriage.

9. In a front-strike typewriting machine, the combination with a carriage, of ribbons having each a portion extending along the printing line for writing several inked copies simultaneously, means to guide said ribbons to upright positions, spools for said ribbons, one pair of spools for each ribbon, said spools arranged to face each other, and mechanism to wind said ribbons when said carriage is moved in one direction whereby a new portion of ribbon is presented to the next line of writing, said mechanism being ineffective when the carriage is moved in the other direction.

10. In a front-strike typewriting machine, the combination with a machine frame, a platen and a carriage, of ribbons having a portion extending along the printing line of said platen for writing several inked copies simultaneously, spool-sets for said ribbons mounted on horizontal axes on said carriage, a rack fixed to said machine frame, a shaft, gearing to drive said shaft from said rack, and gearing to drive said spool-sets from said shaft; said shaft being shiftable to drive either of said spool-sets to reverse said ribbons.

11. In a front-strike typewriting machine, the combination with a machine frame, a platen and a carriage, of ribbons having a portion extending along the printing line of said platen for writing several inked copies simultaneously, spool-sets for said ribbons mounted on horizontal axes on said carriage, a rack fixed to said machine frame, a shaft, gearing to drive said shaft from said rack, gearing to drive said spool-sets from said shaft, said shaft being shiftable to drive either of said spool-sets to reverse said ribbons, and a spring detent engaging said shaft to maintain it in position for driving either spool-set.

12. In a front-strike typewriting machine, the combination with a machine frame, a platen and a carriage, of ribbons having a portion extending along the printing line of said platen for writing several inked copies simultaneously, spool-sets for said ribbons mounted on horizontal axes on said carriage, guide rolls for directing the movement of said ribbons, shafts for said spools, brackets for said shafts, a shaft shiftable to drive either of said spool shafts to reverse the winding of said ribbons, a rack fixed on said machine frame, and gearing to drive said spool shafts from said shiftable shaft and the latter shaft from said rack.

13. In a typewriting machine, the combination with a machine frame, a platen and a carriage, of ribbons having a portion extending along the printing line of said platen for writing several inked copies simultaneously, spool-sets for said ribbons mounted on said carriage, guides for directing the movement of said ribbons, shafts for said spools, brackets for said shafts, a shaft shiftable to drive either of said spool shafts to reverse the winding of said ribbons, a rack fixed on said machine frame, gearing to drive said spool shafts from said shiftable shaft and the latter shaft from said rack, and a pawl and ratchet to drive said shiftable shaft to wind said ribbons when said carriage travels in one direction and to permit said ribbons to remain inactive when the carriage travels oppositely.

14. In a front-strike typewriting machine, the combination with a carriage, of ribbons having a portion extending along the printing line between which sheets are passed for writing several inked copies simultaneously, spools for said ribbons, one pair of spools for each ribbon mounted horizontally along said carriage, means to guide each ribbon to a position of effective relation to the platen at the printing line, all the ribbons being brought vertical and close, and means on the carriage adapted to wind said ribbons by movement of said carriage.

15. In a front-strike typewriting machine, the combination with a machine frame and carriage, of ribbons extending along the printing line for writing several inked copies simultaneously, spools for said ribbons on a horizontal axis, a rack fixed on said machine frame, mechanism actuated by said rack to wind said ribbons when said carriage travels, and means to guide the ribbons into positions of effective relation to the platen at the printing line.

16. In a front-strike typewriting machine, the combination with a machine frame, a platen and a carriage, of ribbons having a portion extending along the printing line of said platen for writing several inked copies simultaneously, spool-sets for said ribbons mounted on said carriage, a rack fixed to said machine frame, a shaft, gearing to drive said shaft from said rack, gearing to drive said spool-sets from said shaft, said shaft being shiftable to drive either of said spool-sets for reversing the ribbons, a spring detent engaging said shiftable shaft to maintain it in position for driving either spool-set, and a back-check pawl to rotate said shaft for winding said ribbons when the carriage travels in one direction and to permit the shaft to remain inactive while the carriage travels oppositely.

17. In a typewriting machine, the combination with a carriage, of ribbons extending along the printing line for writing several inked copies simultaneously, spool-sets for said ribbons, one spool set at each end of the carriage, means to drive either of said

spool-sets, means for reversing said ribbons, means for maintaining said driving mechanism in position while driving the spool-sets, said ribbons adapted to be wound when the carriage is moved in one direction but remaining inactive when the carriage moves in the opposite direction.

18. In a front-strike typewriting machine, the combination with a carriage, of ribbons extending along the printing line for writing several inked copies simultaneously, spool-sets for said ribbons, mechanism extending between said spool sets for winding said ribbons by movement of said carriage, and means to guide each ribbon into an upright position at the printing line.

19. In a front-strike typewriting machine, the combination with a carriage, of ribbons extending along the printing line for writing several inked copies simultaneously, spool-sets for said ribbons on horizontal axes, mechanism for winding said ribbons when said carriage travels in one direction, means for reversing said ribbons, and means to guide each ribbon into an upright position at the printing line.

20. In a front-strike typewriting machine, the combination with a carriage, of ribbons extending along the printing line for writing several inked copies simultaneously, spool-sets for said ribbons, mechanism for winding said ribbons by travel of said carriage, means whereby either of said spool-sets may be driven for reversing said ribbons, means for maintaining said mechanical parts in position while driving either spool-set, and means to guide each ribbon into an upright position at the printing line.

21. In a typewriting machine, the combination with a traveling carriage, of a ribbon spool journaled on a suitably positioned axis on said carriage perpendicular to the direction of carriage travel, a guide through which the ribbon is carried from an inclined to a vertical position, a guide for bringing the ribbon adjacent the printing point and means whereby the ribbon may be wound in either direction, at will, by movement of the carriage.

22. In a front-strike typewriting machine, the combination with a traveling carriage, of a plurality of ribbon spools journaled on a horizontal axis thereon at each end of said carriage, guides for turning the ribbons from planes parallel to the spool axes to vertical positions, a guide for each ribbon to bring it adjacent the printing point of the paper on the platen and means whereby the ribbon may be wound in either direction, at will, by movement of the carriage.

23. In a front-strike typewriting machine, the combination with a traveling carriage, of a rail adjacent the front of said machine on which said carriage is carried, a rack on said rail, ribbon spools on said carriage, a pinion on said carriage arranged to mesh with said rack, and driving connections between said pinion and the ribbon spools.

24. In a typewriting machine, the combination with a traveling carriage, of a horizontal shaft on said carriage at each end thereof, a plurality of ribbon spools journaled on each shaft, means for locking said spools to said shafts, means for alternately driving said shafts by carriage movement, and means for guiding the ribbons into substantially vertical positions at the printing point.

25. In a typewriting machine, the combination with a traveling carriage, of a horizontal shaft at each end of said carriage perpendicular to the direction of carriage travel, a plurality of ribbon spools on each of said shafts, ribbons, guides for turning the ribbons to vertical positions and mechanism extending along the carriage between said spools adapted to be actuated by movement of the carriage to wind one of said spools.

26. In a front-strike typewriting machine, the combination with a traveling carriage and a platen thereon, of ribbon spools on the carriage forward of the platen and having horizontal axes perpendicular to the direction of the carriage travel, means to guide the ribbons from the spools to the ends of the writing line and along the front of the platen and mechanism extending along the carriage between said spools adapted to be actuated during movement of the carriage to wind a spool.

27. In a typewriting machine, the combination with a traveling carriage and a platen thereon, of ribbon spools on the carriage forward of the platen, a rack on the machine frame in front of the platen, and gearing engaging said rack and extending between the ribbon spools adapted to be operated by the movement of the carriage.

28. In a typewriting machine, the combination with a traveling carriage and a platen thereon, of ribbon spools on the carriage, a stationary rack in front of the carriage, a shaft on the carriage and extending longitudinally thereof in front of the platen, gearing forming a one-way driving connection between said shaft and the rack, and gearing connecting said shaft with the ribbon spools.

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