L. H. FRIEDMAN.

TYPE WRITING MACHINE.

APPLICATION FILED FEB. 4, 1913.

1,081,108.

Patented Dec. 9, 1913.

2 SHEETS—SHEET 1.

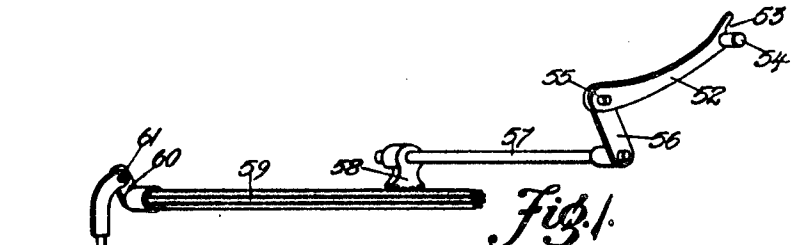


Fig. 1.

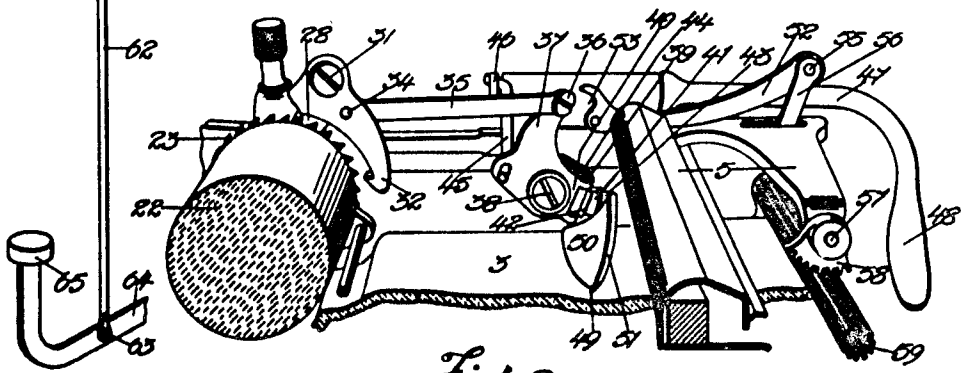


Fig. 2.

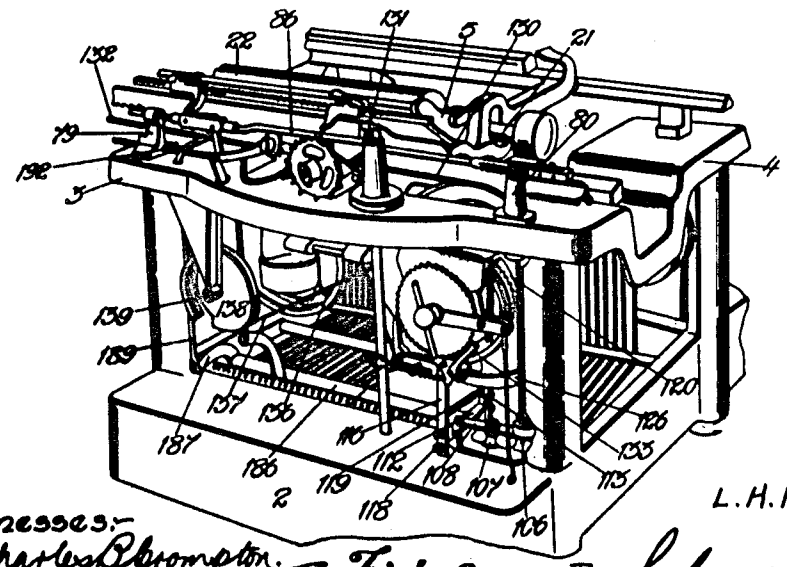


Fig. 3.

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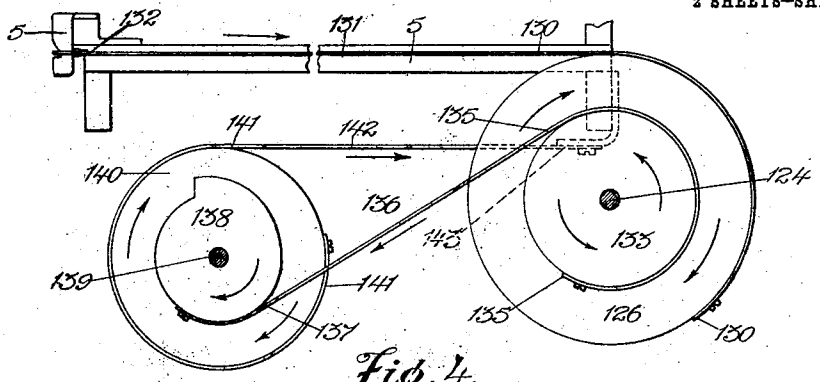


Fig. 4.

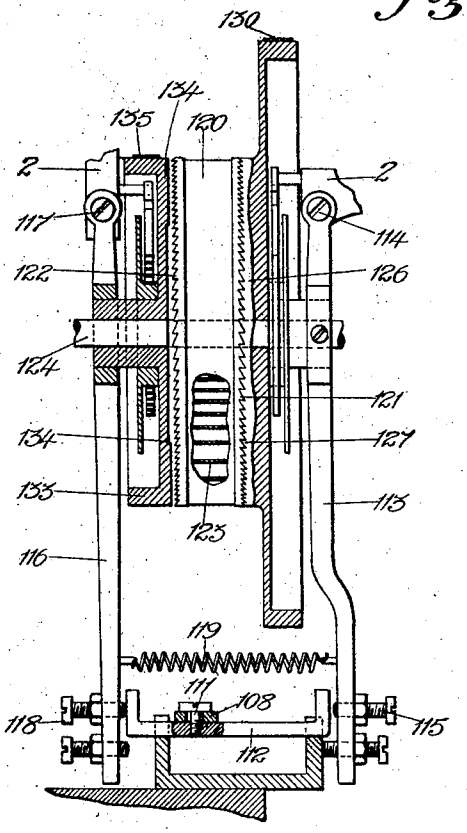


Fig. 5.

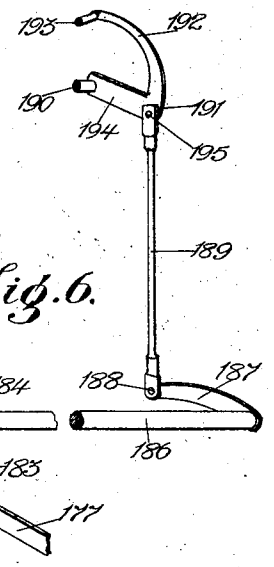


Fig. 6.

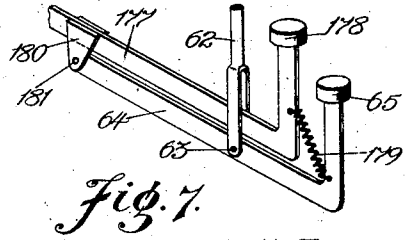


Fig. 7.

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UNITED STATES PATENT OFFICE.

LESLIE HAROLD FRIEDMAN, OF ST. KILDA, MELBOURNE, VICTORIA, AUSTRALIA.

TYPE-WRITING MACHINE.

1,081,108. Specification of Letters Patent. Patented Dec. 9, 1913.

Original application filed February 12, 1912, Serial No. 677,064. Divided and this application filed February 4, 1913. Serial No. 746,181.

To all whom it may concern:

Be it known that I, LESLIE HAROLD FRIEDMAN, a subject of the King of Great Britain and Ireland, previously residing at 268 Albert street, in the post town of East Melbourne, a suburb of the city of Melbourne, but now a resident of "Killeen," Grey street, in the city of St. Kilda, a suburb of the city of Melbourne, both in the county of Bourke, State of Victoria, Commonwealth of Australia, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates particularly to typewriting machines of the kind described in the specification of my prior United States Patent No. 1056657 issued March 18th, 1913, wherein the carriage is automatically returned at the end of each line written.

The main object of the present invention is to provide for the paper roller of the machine being partially turned and for the returning mechanism being operated from the keyboard of the machine, when desired, before a line has been completely written and also to partially turn the paper roller with each such premature operation of the returning mechanism. The arrangement in this invention is such that the paper roller may not only be operated with each automatic return of the carriage and with each premature operation of the returning mechanism but may also be partially rotated without in any way operating the carriage returning mechanism and quite regardless of the position of the carriage.

Other objects and advantages will be in part apparent and in part pointed out hereafter.

Referring to the drawings which form a part of this specification:—Figure 1 is a view showing mechanism by which the paper roller may be partially turned by the depression of a key. Fig. 2 is a view of one end of the carriage showing the relationship between various parts for turning the paper roller. Fig. 3 is a rear perspective view of a typewriting machine showing in position the reversing mechanism disclosed by my prior United States Patent No. 1056657 and which will be hereinafter more fully illustrated. The carriage is in a position at which the typing of a line is commenced. Fig. 4 is a back or rear view to show clearly the connection, by tapes, of the reversing mechanism to the carriage. The arrows indicate the direction of movement of the various parts when a line is being written. When the carriage automatically returns or reverses after the line has been written the direction of travel of the parts here shown is opposite to that indicated by the arrows. Fig. 5 is an end part sectional view of the carriage reversing mechanism. Fig. 6 is a view showing mechanism for operating the carriage reversing mechanism, by means of a key, before the end of a line is reached. Fig. 7 is a view showing the key referred to in Fig. 6 and also the key referred to in Fig. 1.

The invention includes a framework 2, having a right hand end 3, and a left hand end 4. Slidably carried by the framework is a carriage 5 of any suitable construction. The carriage is controlled by a ribbon tension spring hereinafter more fully referred to. The tension spring is intermittently released by the depression of keys as is usual, the carriage moving from the right toward the left hand end of the framework each time a key is depressed.

Mounted upon an axle 21 carried by the carriage 5 is a rotatable paper roller 22 having at its right hand end a ratchet wheel or ring 23. Movably accommodated by the axle 21 is the inner end of a lever 28 pivoted to the upper end of which by a pivot pin 31 is a pawl 32. Pivoted by a pivot pin 34 to the pawl 32 is the inner end of a link 35. Pivoted (Fig. 2) to the outer end of the link 35, by a pivot pin 36, is the upper arm 37 of a crank lever. The crank lever, by a stud 38, is pivotally secured to the carriage 5. Pivoted by a pivot pin 39 to the lower arm 40 of the crank lever is a tripper 41 having (Fig. 2) a limit lip 42. Carried by the tripper 41 is a roller 43 and controlling the said tripper in its relationship to the crank lever is a spring 44.

Pivotally connected to the lower arm 40 of the crank lever is the lower end of a link 45. The upper end of the said link 45 is pivoted (Fig. 2) to the inner end of a lever 46. The outer end of the lever 46 is secured to a hand rod 47 having a finger extension 48. If desired, however, the link 45, lever 46 and hand rod 47 may be dispensed with as they are provided for convenience only.

Secured at the right hand end 3 of the framework 5, is (Fig. 2) a deflector 49, having a first pathway 50, and a second pathway 51. The roller 43 of the tripper 41 engages the pathways 50 and 51 as will be hereinafter explained.

Engaging with the upper arm 37 of the crank lever aforementioned is the free and inner end of a link 52. Formed in the said free end (Fig. 1) is a mouth 53 adjoining which is a projection 54. Pivoted by a pivot pin 55 to the outer end of the link 52 is the upper end of the lever 56. The lower end of the lever 56 is secured to the right hand end of a spindle 57 carried by the carriage. Secured to the left hand end of the spindle 57 is a toothed sector 58. Engaged by the sector 58 is a longitudinal fluted spindle 59 mounted in bearings in the framework. Secured to the left hand end of the fluted spindle 59 is the lower end of a lever 60. Pivoted by a pivot pin 61 to the upper end of the lever 60 is the upper end of a connecting rod 62. The lower end of the connecting rod 62 is pivoted by a pivot pin 63 to a key lever 64, attached to which is a key 65. The lever 64 is pivoted to another key lever 177 hereinafter described.

Upstanding above the right hand end of the rear of the framework is a plain bearing 79. Upstanding above the left hand end of the rear of the framework is a bearing 80. Mounted in the bearings 79 and 80 is a reversing bar 86 as described and illustrated by my prior United States Patent No. 1,056,657.

Pivoted (Fig. 3) to a stud 107 upstanding from the framework is an intermediately pivoted lever 108 having an outer slotted end and an inner slotted end. The outer end accommodates a crank pin 106 operated by the bar 86 aforementioned. Accommodated by the inner slotted end is a pin 111 upstanding from a slide 112. Adjoining (Fig. 5) the slide 112 is an inner clutch lever 113. This is pivoted by a pivot pin 114, at its upper end, to the rear of the left hand end of the framework. At its lower end the clutch lever 113 is provided with adjusting screws 115 which engage with the slide 112 and with the framework of the machine. Adjoining (Fig. 5) the slide 112 is also an outer clutch lever 116. This is pivoted, by a pivot pin 117, at its upper end, to the rear of the left hand end of the framework. The outer clutch lever is provided at its lower end with adjusting screws 118. Extending between the clutch levers 113 and 116 is a contracting spring 119.

Between (Fig. 5) the clutch levers is a driving drum 120, having inner teeth 121 and outer teeth 122. Within the driving drum is a coiled ribbon tension spring 123. One end—the outer end—of this is secured to the interior of the drum while the other or inner end is secured to an axle 124. Adjoining (Fig. 5) the driving drum 120 and between the same and the inner clutch lever 113 is an inner clutch drum 126, having teeth 127. The drum 126 is loosely mounted on the axle 124. Secured (Fig. 4) to the circumference of the inner clutch drum 126 is a winding end 130 of a first tape 131. The other or carriage end 132 of the said first tape is secured to the right hand end of the carriage 5. Between (Fig. 5) the driving drum 120 and the outer clutch lever 116 is an outer clutch drum 133 having teeth 134. The drum 133 is loosely mounted on the axle 124. Secured (Fig. 4) to the circumference of the said drum 133 is the winding end 135 of a second tape 136. The other or cam end 137 of the said tape 136 is secured to the circumference of a cam 138. The cam 138 is mounted upon the outer end of a spindle 139 mounted upon the inner end of which is a wheel 140. Secured to the circumference of the wheel 140 is the winding end 141 of a third tape 142. The other or carriage end 143 of the third tape 142 is secured to the left hand end of the carriage 5.

Pivoted to the rear of the framework is (Fig. 7) a key lever 177 having a key 178. Attached to the said key lever 177 is one end of a spring 179 the other end of which is attached to the key lever 64. Depending from the lever 177 are lugs 180 carrying a pivot pin 181 to which is pivoted the said key lever 64. Pivoted (Fig. 6) by a pivot pin 182 to the key lever 177 are the lower ends of two links 183. Pivoted by a pivot pin 184 to the upper ends of the links 183 is the front end of a lever 185. Secured to the rear end of the lever 185 is a cross spindle 186 projecting from which is a lever 187. Pivoted by a pivot pin 188 to the lever 187 is the lower end of a connecting rod 189. Pivoted (by a stud 190) to the framework of the machine is a lever 191 having an upper arm 192. Projecting from the upper arm 192 is a finger 193. This engages the reversing bar 86 as will be hereinafter understood. The said lever 191 is also provided with a lower arm 194. The lever is pivoted by its lower arm 194 to the stud 190. Pivoted to the said lever by a pivot pin 195 is the upper end of the connecting rod 189.

The cycle of operations with this invention is as follows:—Upon each depression of a key 6 or its equivalent it will be obvious that the escapement mechanism aforedescribed permits the carriage 5 to move a certain distance from right to left as in an ordinary typewriting machine. The inner clutch drum 126 is now in engagement with the driving drum 120 which is rotated by its tension spring 123. The inner clutch drum 126 is therefore being driven by the driving

drum 120, the direction of travel being indicated by the arrows shown in Fig. 4. The drum 126 draws with it, each time a key is depressed and it is permitted to travel, the winding end 130 of the first tape 131. On account of the carriage end 132 of this tape being attached to the right hand end of the carriage 5 the said carriage moves in the direction indicated, *i. e.* from right to left. Upon the carriage 5 reaching the end of a line the pivoted clutch levers 113 and 116 are operated in the manner described in my prior United States Patent No. 1056657 which throws the inner clutch drum 126 out of engagement and the outer clutch drum 133 into engagement with the driving drum 120. Immediately this occurs the tension spring 123 within the driving drum 120 drives the outer clutch drum 133 which, by the second tape 136 moves the cam 138 in the opposite direction to that indicated by the arrows shown in Fig. 4. The cam 138 turns the spindle 139 upon which it is mounted and therefore also turns the wheel 140 to which is attached the winding end 141 of the third tape 142. On account of the carriage end 143 of this tape being attached to the left hand end of the carriage 5 the said carriage moves in a reverse direction to that which it previously traversed from left to right, and thus the said carriage is returned to the position it first occupied.

Should it be desired to return or reverse the carriage before the end of a line is reached such may be accomplished by depressing the key 178 thereby depressing also the key lever 177 by which it is carried. This operates, by the links 183 and lever 185, the cross spindle 186 to which is attached the lever 187. The connecting rod 189 is thereby forced upwardly operating the lever 191, the finger 193 of the upper arm 192 of which is thus brought into engagement with the reversing bar 86. This action moves the reversing bar 86 from right to left operating the clutch levers 113 and 116 by mechanism disclosed by prior Patent No. 1056657 as before mentioned and thereby throwing the inner clutch drum 126 out of engagement and the outer clutch drum 133 into engagement with the driving drum 120. The carriage then travels toward its original position as already set forth. It is necessary for the typist to retain the key 178 depressed for as long as it is desired for the carriage to return. Immediately the finger is removed from the key 178 by mechanism disclosed by the prior Patent No. 1056657 the reversing bar 86 returns to its original position and disengages the outer clutch drum 133 and once more engages the inner clutch drum 126 with the driving drum 120. As the carriage returns from the end of a line it will be plain, that the roller 43 upon the tripper 41 engages with the pathway 51 of the deflector 49. This operates the aforedescribed crank lever which by its upper arm 37 operates the link 35 throwing the pawl 32 into engagement with the ratchet ring 23 at the end of the roller 22. The roller 22 is thus turned automatically as the carriage returns. Upon the carriage moving normally, that is from right to left, it will be seen that the tripper 41 being pivoted to move in one direction only engages with the pathway 50 of the deflector 49 and turns or pivots upon the pivot pin 39. The crank lever therefore does not operate when the carriage 5 is so moving and the roller 22 is not then turned.

Should it be desired to turn the paper roller before the end of a line is reached the key 65 is depressed drawing downwardly the connecting rod 62. By the fluted roller 59 and toothed sector 58, the spindle 57 and lever 56 now operate the link 52. This engages with the upper arm 37 of the crank lever which operates the link 35 and ratchet ring 23 as described. When the key 65 is depressed the spring 179 returns the said key; but the said spring is not strong enough to draw downwardly with it the key lever 177. When the key 178 and lever 177 are depressed the lever 64 being beneath them is depressed also. The carriage 5 is therefore not only returned as before described but the roller 22 is also rotated in the manner which has just been described. When the carriage 5 is returning under any circumstances the toothed sector 58 carried by the carriage slides along the fluted roller 59 carried by the framework 2.

Upon the carriage being returned before it has reached the end of a line it is obvious that the paper cannot be automatically turned by the tripper 41 and deflector 49 as the link 52 will be in engagement as described, with the upper arm 37 of the tripper's crank lever, the lower arm 40 of which will consequently have lifted or elevated the tripper clear of the deflector 49.

Should it be desired to turn the paper by hand the finger catch 48 of the hand rod 47 may be moved and by the lever 46 and link 45 operate the crank lever, link 35 and pawl 32 as aforedescribed.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A typewriting machine having a sliding carriage, a paper roller carried thereby, mechanism for returning said carriage to its starting position, means for automatically operating the roller with each return of the carriage, and means for manually and simultaneously operating the return mechanism, turning the said roller and disengaging the automatic roller turning means.

2. A typewriting machine having a slid-

ing carriage, a paper roller carried thereby, mechanism for returning said carriage to its starting position, means for automatically operating the roller with each return of the carriage, and means for manually operating the return mechanism, turning the said roller and disengaging the automatic roller turning means.

3. A typewriting machine having a sliding carriage, a rotatable paper roller carried thereby, mechanism for returning the carriage to its starting position, means for manually operating said return mechanism, and means for manually operating said paper roller, the latter means being capable of independent operation, but the operation of the carriage returning means also causing the operation of the roller operating means.

4. A typewriting machine having a sliding carriage, a rotatable paper roller carried thereby, mechanism for returning the carriage to its starting position, means for manually operating said return mechanism, means for manually operating said paper roller, a key lever for operating the last mentioned means independently of the carriage returning means, and a second key for operating the carriage returning means and also adapted to operate the key for actuating the roller operating means.

5. A typewriting machine having a sliding carriage, a rotatable paper roller carried thereby, mechanism for returning the sliding carriage to its starting position, means for manually operating said return mechanism, means for manually operating said paper roller, a key lever for operating said first mentioned means, a second key lever pivoted to the first key lever adapted to be operated thereby but capable of independent operation, and a yielding connection between said key levers, the second key lever actuating the roller operating means.

6. A typewriting machine having a sliding carriage carrying a paper roller and having a mechanism for returning the carriage to its starting position, a key lever, a cross spindle operated by said lever, a connecting rod operated by the spindle, a lever operated by said connecting rod, and actuating the return mechanism, a second key lever operated by the aforesaid key lever, and means operated by the second key lever for actuating the paper roller.

7. A typewriting machine having a sliding carriage, a rotatable paper roller carried thereby, mechanism for returning the carriage to its starting position, a pivoted lever for operating said return mechanism, a second pivoted lever for actuating the paper roller, a key lever, means operated by said lever for operating the first mentioned lever, and means also operated by said lever for operating the second lever.

8. A typewriting machine having a sliding carriage, a rotatable paper roller carried thereby, mechanism for returning the carriage to its starting position, a pivoted lever for operating said return mechanism, a second pivoted lever for actuating the paper roller, means for automatically operating the second lever on the return of the carriage to its starting position, a key lever, means actuated thereby for operating the first mentioned lever, and means also operated by the key lever for actuating the second pivoted lever and disengaging the same from the automatically operating means.

9. A typewriting machine having a sliding carriage, a rotatable paper roller carried thereby, mechanism for returning the carriage to its starting position, a pivoted lever for operating said return mechanism, a second pivoted lever for actuating the paper roller, a key lever, means operated by said lever for operating the first pivoted lever, a second key lever, and means operated by the second key lever for operating the second pivoted lever, the second key lever being adapted to be operated either independently or by means of the first key lever.

In testimony whereof I affix my signature in presence of two witnesses.

LESLIE HAROLD FRIEDMAN

Witnesses:
CECIL MCCLASTREN,
GEORGE A. MCLEN.