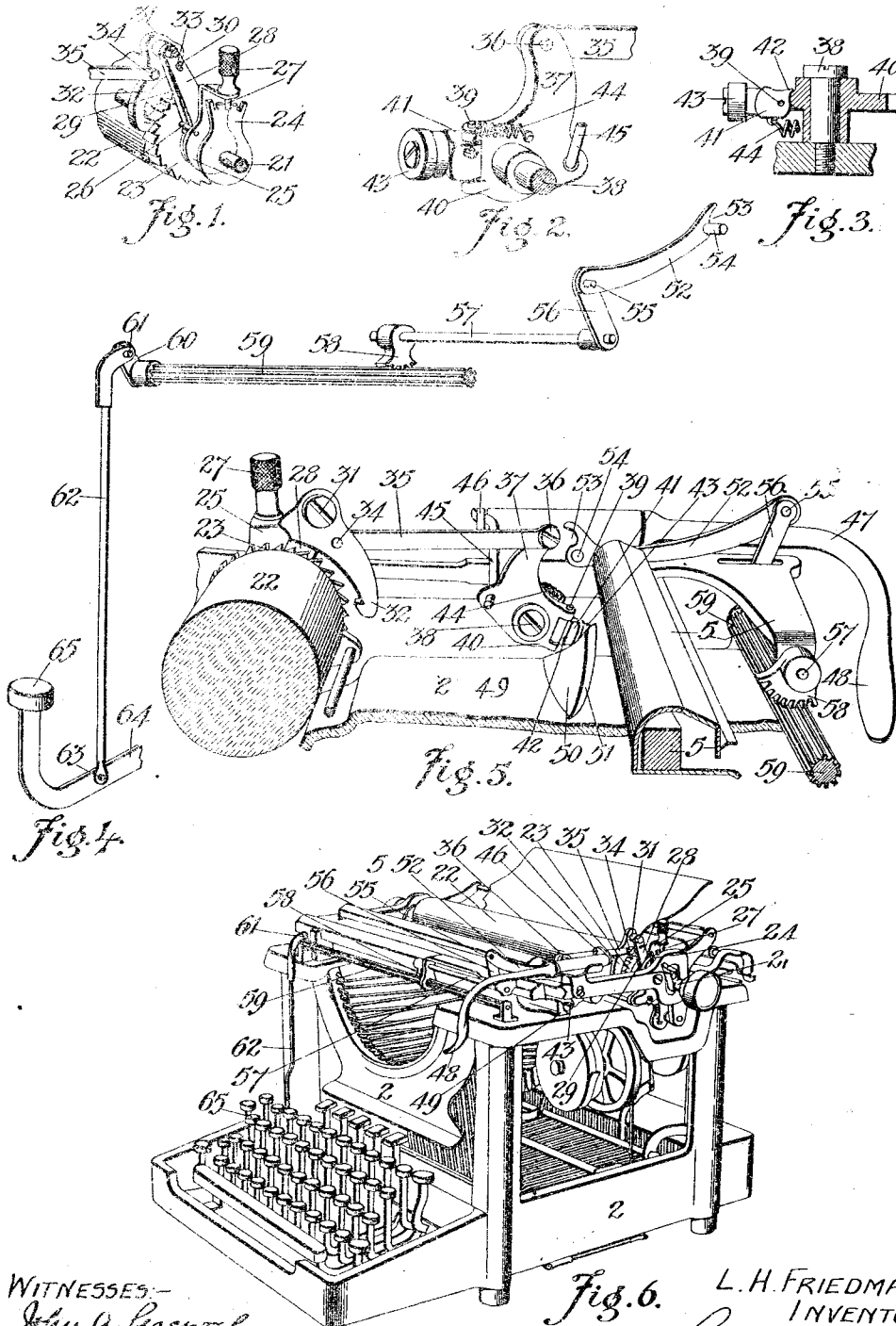


L. H. FRIEDMAN.
 LINE SPACING MECHANISM FOR TYPE WRITING MACHINES.
 APPLICATION FILED NOV. 15, 1912.

1,094,432.

Patented Apr. 28, 1914.



WITNESSES—
 John A. Kernal.
 Charles B. Brompton.

L. H. FRIEDMAN.
 INVENTOR.
 BY *Chaydon Mark*
 ATTORNEY

UNITED STATES PATENT OFFICE.

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

LINE-SPACING MECHANISM FOR TYPE-WRITING MACHINES.

1,094,432.

Specification of Letters Patent.

Patented Apr. 28, 1914.

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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
5 Albert street, in the post-town of East Melbourne, a suburb of the city of Melbourne, in the county of Bourke, State of Victoria, Commonwealth of Australia, and later at
10 "Killeen," Grey street, but now at 32 Carlyle street, both in the city of St. Kilda, a suburb of the city of Melbourne aforesaid, have invented certain new and useful improvements in Line-Spacing Mechanism for Type-Writing Machines, of which the following is a specification.

This invention relates to typewriting machines having a sliding carriage carrying a platen or paper roller operable at will by the typist in order that the paper may be turned
20 a predetermined amount to provide for the lines written being correctly spaced apart.

The object of the invention is to provide a cheap simple and effective line spacing mechanism applicable to either new or old machines.
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The features of novelty will be hereinafter pointed out in the appended claims.

Referring to the drawings which form a part of this specification:—Figure 1 is a
30 view showing portion of a paper roller and mechanism for adjusting the amount of the rotary travel of the said roller. Fig. 2 is a view showing a crank lever carrying a tripper. By the lever the paper roller is turned.
35 Fig. 3 is a sectional plan view of the crank lever seen in Fig. 2. Fig. 4 is a view showing mechanism by which the crank lever seen in Fig. 2 may be operated by a key. Fig. 5 is a view of one end of the carriage of a
40 typewriting machine looking at the inside of the same and showing the relationship between various parts for turning the paper roller. Fig. 6 is a front perspective view of a typewriting machine with this invention
45 applied.

The invention includes a framework 2. Slidably carried by the framework is a carriage 5 of any suitable construction. The carriage is controlled by a ribbon tension
50 spring 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
55 by the carriage 5 is a rotatable paper roller

22 having at its right hand end a ratchet wheel or ring 23. Mounted on the right hand end of the axle 21, adjacent the ratchet ring 23, is a fixed racked sector 24. Adjoining the sector 24, and movably mounted
60 upon the axle 21, is an adjusting device 25 having a limit stop 26. The adjusting device 25 also carries a finger operated retention pin 27 engaging with the fixed racked sector 24. Movably accommodated by the
65 axle 21 is the inner end of a lever 28. Secured to the said lever is the outer end of a cushioning plate spring 29. In the upper end of the said lever is a hole 30 and pivoted to the said upper end, by a pivot pin 31, is a
70 pawl 32. Projecting from the pawl 32, and engaging in the hole 30, is a pin 33. Pivoted by a pivot pin 34 to the pawl 32 is the inner end of a link 35. Pivoted to the outer end of the link 35, by a pivot pin 36, is the
75 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 a limit lip 42. Carried by
80 the tripper 41 is a roller 43 and controlling the said tripper in its relationship to the crank lever is a spring 44. Pivotaly connected to the lower arm 40 of the crank lever is the lower end of a link 45. The
85 upper end of the said link 45 is pivoted 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
90 47 may be dispensed with as they are provided for convenience only.

Secured at the right hand end 3 of the framework 2, below the carriage 5, is a deflector 49, having a first pathway 50, and a
95 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
100 inner end of a link 52. Formed in the said free end 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
105 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
110

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 may be pivoted to another key lever or to the framework.

The cycle of operations with this invention is as follows:—As the carriage is returned 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 aforescribed 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, 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 carriage 5 is returning 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 is moved and by the lever 46 and link 45 operates the crank lever, link 35 and pawl 32 as aforescribed.

To adjust the amount of turn given to the roller 22 any ordinary mechanism may be used, that illustrated being of a common nature. To operate the adjusting device 25 the retention pin 27 is removed from engagement with the racked sector 24 and placed within another notch of the said sector 24. This adjusts the limit stop 26 in relation to the lever 28 thereby altering the throw of the link 35.

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 and a rotatable paper roller, a crank lever pivoted to said carriage, means whereby said lever when operated partially rotates said roller, a link connected to said crank lever, a spindle for operating said link, hand-operated means for rotating said spindle to move said crank lever, and manually operated means for operating said crank lever, from a point adjacent to the key board of the machine, to rotate said roller independently of said last mentioned means.

2. A typewriting machine having a sliding carriage and a rotatable paper roller, a crank lever pivoted to said carriage, means whereby said lever when operated partially rotates said roller, means for operating said crank lever when the carriage is moved toward its starting position, a link having an open mouth adjacent to said crank lever, and manually operated means for moving said link to operate said crank lever and thereby rotate said roller independently of said last mentioned means.

3. A typewriting machine having a sliding carriage and a rotatable paper roller, a crank lever pivoted to said carriage, means whereby said lever when operated partially rotates said roller, means for operating said crank lever when the carriage is moved toward its starting position, a spindle carried by said carriage, means operated by said spindle for moving said crank lever, a toothed member mounted on said spindle, a fluted spindle mounted on the machine framework and engaging said toothed member, and manually operated means, situated adjacent to the key board of the machine, for operating said fluted spindle.

4. A typewriting machine comprising: a slidable carriage, a rotatable paper roller, a ratchet wheel fixed to the roller, a rocking lever carrying a pivoted pawl engaging the ratchet wheel, a crank lever, a link pivotally connected to said crank lever and to said pawl, automatic means for actuating said crank lever when the carriage is moved to its starting position, means for manually operating said crank lever, a link adapted to engage said crank lever and operate it independently of said automatic means, and means for operating said link from a point adjacent the key board of the machine at any point in the travel of the carriage.

5. A typewriting machine comprising: a frame, a rotatable paper roller, a ratchet wheel fixed to said roller, a pawl for moving the roller step by step, a fluted spindle mounted in the frame and extending along the line of travel of the carriage, means for operating said fluted spindle from a point adjacent the key board of the machine,

means upon the carriage operatively engaged with said fluted spindle at all points in the travel of the carriage for actuating said pawl and means for automatically operating said pawl when the carriage is moved to its starting position.

6. A typewriting machine comprising: a frame, a slidable carriage, a rotatable paper roller, a pawl and ratchet mechanism for moving said roller step by step, automatic means for operating said pawl and ratchet mechanism when the carriage is moved to its starting position, a fluted spindle journaled on the frame, a shaft mounted on the carriage and carrying a sector gear engaging with said fluted spindle at all points in the travel of the carriage, a key lever, means connecting said key lever and said fluted spindle and means connected to said shaft engageable with said pawl and ratchet mechanism to operate it independently of said automatic means.

7. In a typewriting machine having a rotatable paper roller provided with a ratchet ring, a key lever, a connecting rod pivotally attached to said lever, a lever pivoted to said connecting rod, a fluted spindle secured to said lever, a toothed sector in engagement with said spindle, a spindle secured to said toothed sector, a lever secured to said spindle, a link pivoted to said lever, a crank lever pivoted to the carriage and engaged by said link, and a pawl controlled by said crank lever.

8. In a typewriting machine having a framework in which is mounted a sliding carriage having a rotatable paper roller provided with a ratchet ring and a pawl the movement of which is adjustable; the combination with a crank lever pivoted to the carriage, of a key lever, a connecting rod pivoted to said key lever, a lever pivoted to said connecting rod, a longitudinal fluted spindle mounted in the framework and secured to said lever, a spindle carried by the carriage, a toothed sector mounted upon said spindle and engaging the fluted spindle, a lever secured to said spindle, and a link pivoted to said lever and having a free end with an open mouth therein to engage the crank lever and operate the paper roller by the pawl and ratchet ring.

9. A typewriting machine having a sliding carriage and rotatable paper roller, a crank lever pivoted to said carriage, means whereby said crank lever when operated partially rotates said roller, means for automatically operating said crank lever on the return movement of the carriage, and hand-operated means for operating said crank lever to rotate the roller and for disengaging said lever from the automatically operated means.

10. A typewriting machine having a sliding carriage and a rotatable paper roller, a

crank lever pivoted to said carriage, means whereby said crank lever when operated partially rotates said roller, automatically operated means adapted to engage one arm of said crank lever on the return movement of the carriage and key-operated means for engaging the other arm of said crank lever to rotate the roller and for also disengaging said crank lever from the automatically operated means.

11. In a typewriting machine having a sliding carriage and a rotatable paper roller, a deflector below said carriage, a crank lever pivoted to said carriage and operated by the passage thereof in one direction over said deflector, means operated by said crank lever for rotating said roller and means for operating the crank lever to advance the paper roller and to free the crank lever from the deflector.

12. In a typewriting machine having a sliding carriage and a rotatable paper roller, a deflector below said carriage, a crank lever pivoted to said carriage and operated by the passage thereof in one direction over said deflector, means operated by said crank lever for rotating said roller, a key lever and means operated by said key lever for operating the crank lever to advance the paper roller and to free the crank lever from the deflector.

13. In a typewriting machine having a sliding carriage and a rotatable paper roller mounted in said carriage, an axle to said roller, a lever pivotally attached to said axle, a pawl pivoted to said lever, a link pivoted to said pawl, a crank lever having an upper arm and a lower arm, said link being pivoted to said upper arm, a spring controlled tripper pivoted to said lower arm, a limit lip protruding from said tripper, a roller carried by said tripper, and a deflector below said carriage engaged by said roller.

14. In a typewriting machine having a sliding carriage, an axle carried by said carriage, a roller mounted upon said axle, a ratchet ring carried by said roller, a lever pivotally attached to said axle, a pawl pivoted to said lever, a link pivoted to said pawl, a crank lever pivotally attached to said carriage and having an upper arm and a lower arm, said link being pivoted to said upper arm, a tripper carried by said lower arm, and a deflector below said carriage and engaged by said tripper.

15. A typewriting machine having a sliding carriage, a rotatable paper roller, a crank lever for causing the partial rotation of said roller, an upper and a lower arm to said crank lever, a substantially vertical pivot pin in said lower arm, a tripper mounted on said pivot pin, a deflector adjacent said carriage, said tripper pivoting idly in a horizontal plane during the forward move-

ment of the carriage and being moved in a vertical plane during the return movement thereof to cause the crank lever to rotate the paper roller.

16. A typewriting machine having a sliding carriage, a rotatable paper roller, a crank lever for causing the partial rotation of said roller, a pivot pin in one arm of said lever, a tripper mounted on said pivot pin and a deflector adjacent said carriage, said tripper pivoting idly in one plane during the forward movement of the carriage and being moved during the return movement thereof in a plane at right angles to that of its former idle movement to cause the crank lever to rotate the paper roller.

17. A typewriting machine having a sliding carriage, a rotatable paper roller, a crank lever for causing the partial rotation of said roller, a pivot pin in one arm of said lever, a spring controlled tripper mounted on said pivot pin, a roller mounted on said tripper and a deflector adjacent said carriage, said tripper pivoting idly in one plane during the forward movement of the carriage and being moved during the return movement thereof in a plane at right angles to that of its former idle movement to cause the crank lever to rotate the paper roller.

18. A typewriting machine comprising: a frame, a slidable carriage, a rotatable paper roller, a ratchet wheel fixed to said roller, a rocking lever adjacent the roller carrying a pawl engaging the ratchet wheel, a fluted spindle mounted in the frame extending along the line of travel of the carriage, means for operating said fluted spindle from a point adjacent the key board and means upon the carriage operatively engaged with said fluted spindle at all points in the travel of the carriage for actuating said rocking lever.

19. A typewriting machine comprising: a frame, a slidable carriage, a rotatable paper

roller, a pawl and ratchet mechanism for moving the roller step by step, a shaft mounted upon the carriage, a link connected to the shaft and engageable with said pawl and ratchet mechanism, a fluted spindle journaled upon the frame and extended parallel to the line of travel of the carriage for a distance approximating the distance of travel of said carriage, geared means fixed to said shaft and engaging said fluted spindle at all points in the travel of the carriage, a key lever, and means operatively connecting said key lever and said fluted spindle.

20. A typewriting machine comprising: a frame, a slidable carriage, a rotatable paper roller, a ratchet wheel fixed to said roller, a pawl engageable with said ratchet wheel, a fluted spindle journaled upon the frame extending along the line of travel of the carriage, means for operating the fluted spindle from a point adjacent the key board of the machine, and geared means mounted upon the carriage operatively connecting said pawl and said fluted spindle.

21. A typewriting machine comprising: a slidable carriage, a rotatable paper roller, a ratchet wheel fixed to said roller, a pawl for moving said ratchet wheel step by step, a crank lever operatively connected to said pawl by a pivoted link, manually operable means for said crank lever, automatic means for operating said crank lever when the carriage is moved to its starting position and means adapted to engage said crank lever and operate it independently of said automatic means, said means being operatively connected to a key lever disposed adjacent the key board of the machine.

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

LESLIE HAROLD FRIEDMAN.

Witnesses:

GEORGE A. WREN,

VICTOR J. KELSON.