No. 832,244. PATENTED OCT. 2, 1906.

T. L. DENNIS.

TYPE WRITING MACHINE.

APPLICATION FILED DEC. 2, 1904. RENEWED MAR. 3, 1906.

2 SHEETS—SHEET 1.

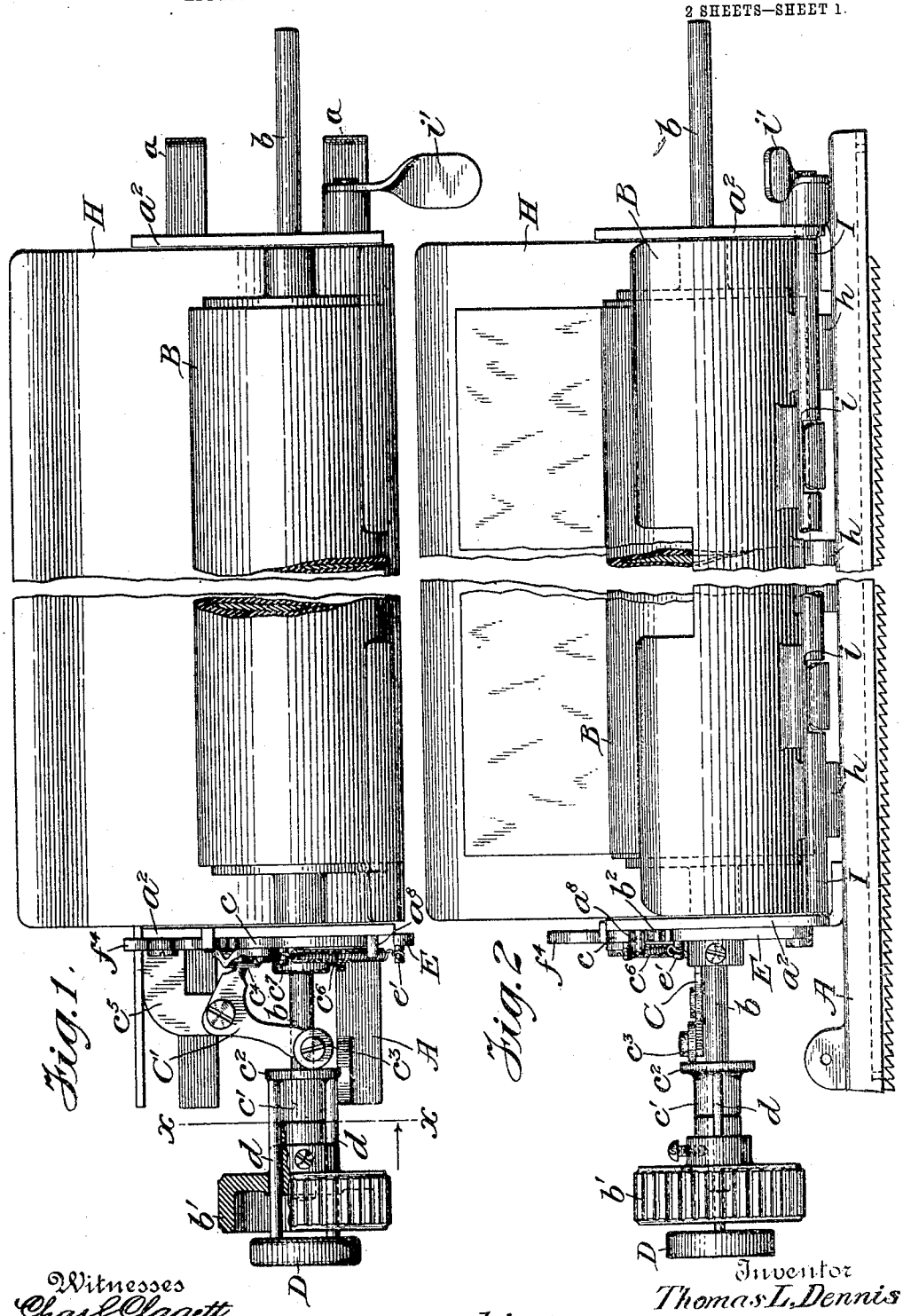

Fig. 1.

Fig. 2.

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Fig. 5

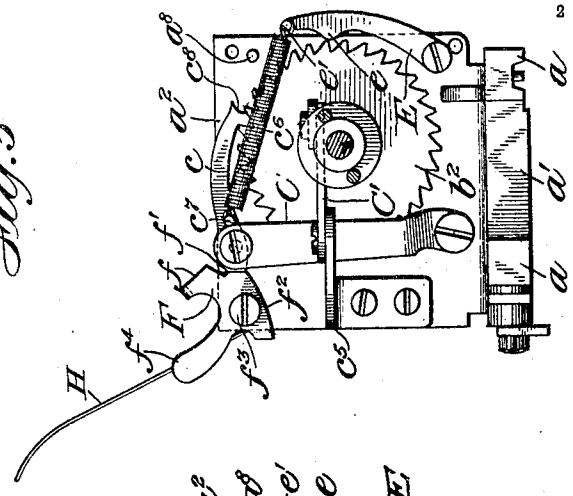


Fig. 4

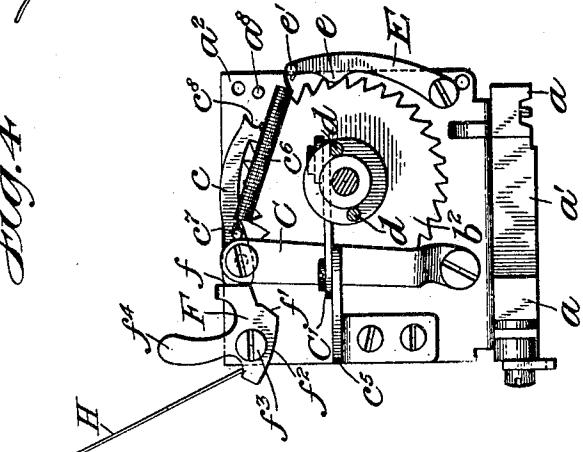
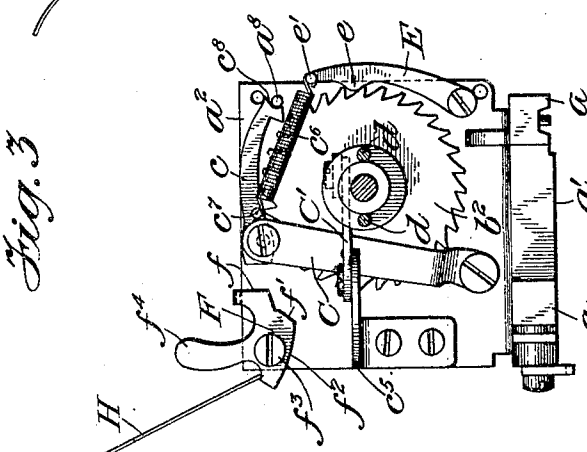


Fig. 3



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UNITED STATES PATENT OFFICE.

THOMAS L. DENNIS, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

No. 832,244. Specification of Letters Patent. Patented Oct. 2, 1906.

Application filed December 2, 1904. Renewed March 3, 1906. Serial No. 304,055.

To all whom it may concern:

Be it known that I, THOMAS L. DENNIS, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention, while relating to type-writing machines as entireties, has reference more particularly to the mechanism of such machines by which the rotation of the cylinder that supports the paper or other material during the type-writing operation and the spacing of the distance between the successive lines in the printing or type-writing operation is effected, the object of the invention being to provide a mechanism of this character which while simple in construction and efficient in operation shall at the same time effect the printing of the successive lines at a greater or lesser distance apart, as may be desired.

To these ends the invention consists, first, in the mechanism by which the intermittent rotation of the cylinder upon which the paper or other material employed to receive the impressions in the type-writing operation is accomplished, to properly dispose in successive lines the type-written impressions upon the sheet or sheets of the latter; second, in the mechanism by which the distance between the successive lines of impressions made in the type-writing operation may be varied and controlled, and, third, in various other constructions and combinations of parts, all as will hereinafter more fully appear.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a plan of the cylinder by which the paper or other material employed to receive the type-written impressions is supported with the rest for the paper or other material in being supplied to the cylinder, the mechanism for rotating the cylinder and controlling the distance between the successive lines, and the carriage in and upon which these parts are mounted and supported, certain of the parts being broken away and others shown in section; Fig. 2, a front elevation of these parts with certain of such parts broken away; Fig. 3, a vertical transverse section of such parts, taken in the plane $x\,x$ of Fig. 1; Figs. 4 and 5, similar sections taken in the same plane as Fig. 3, but showing certain of the parts in slightly-different relationships in the two figures.

In all the figures like letters of reference are employed to designate corresponding parts.

A indicates the carriage by means of which the paper or other material that is to receive the type-written impressions is fed to the action of the successive types and the impressions made upon it by their action disposed in parallel lines transversely of the sheet. This carriage may be constructed in any ordinary or preferred form and may be adapted for use in connection with any of the ordinary or well-known forms of type-writing machines. As shown in the drawings, however, it is constructed with a suitable base which is composed of two parallelly-disposed bars a, that are connected and tied together at their ends or at other suitable points by bars a', extending between them, with two upwardly-projecting stands a^2 secured to the upper side of the base near the ends thereof. Within the stands a^2, as thus disposed on the carriage A, is journaled a shaft b, upon which is fixedly secured the cylinder B, which supports and carries the paper or other material that is to receive the type-written impressions during the type-writing operation. This shaft is or may be provided on one or both of its ends with a knob or knobs b', by which the rotation of the cylinder B in one or the other directions may be effected by the hand of the operator when desired. As thus equipped this shaft b is also provided at or near one of its ends with a ratchet-wheel b^2, which is fixedly secured thereto in close relationship to one of the stands a^2 and is engaged by a hook-shaped pawl c, by means of which an intermittent rotary movement may be imparted to the cylinder B to properly space the distance between the successive lines of type-written matter upon the paper or other material as the carriage A in the type-writing operation is returned to the proper position after the completion of each line to commence a new one. To permit of the accomplishment of this result, the pawl c is pivoted to the upper end of a swinging arm C, which in turn is pivoted at its lower end to the stand a^2 and is swung in the proper direction to rotate the cylinder B from a sleeve or collar c', which is loosely mounted upon

the shaft b, whereby to be capable of a sliding movement back and forth thereon, and is provided on its inner end with an outwardly-extending circumferential flange c^2.

With the parts disposed as thus explained the sleeve or collar c' is connected with the swinging arm C through the intervention of a bell-crank lever C', which contacts at one of its ends with the face of the sleeve or collar c' through the intervention of a friction-roll c^3, with which the end is provided, and connects at its other end with the swinging arm C by a ball-and-socket joint c^4, and is pivoted at its angular portion upon the bracket c^5, secured to and projecting horizontally outward from the stand a^2. The connection of the sleeve or collar c' with the swinging arm C being thus effected, the swinging of the latter in one direction to rotate the cylinder B is accomplished by sliding the sleeve or collar c' on the shaft b toward the ratchet-wheel b^2, while the swinging of this arm in the opposite direction is effected by means of a spiral spring c^6, which is connected at one of its ends with a pin c^7 on the pawl c, whereby to not only effect the swinging movement of the arm in a backward direction, but also to normally hold the pawl c in contact with the teeth of the ratchet, as shown.

To effect the sliding movement of the sleeve or collar c' toward the ratchet-wheel b^2, various means may be adopted. I prefer, however, to employ for the purpose the button or finger-piece D, which is disposed outside of the outer end of one of the knobs b' and is connected with the sleeve or collar c' through the intervention of two rods d, which fixedly secured at their outer ends to the button or finger-piece D and fitted to slide in suitable orifices formed longitudinally through the knob b' on opposite sides of its axis are loosely engaged at their inner ends with the flange c^2 on the sleeve or collar c'. By this arrangement, as will be seen, the rotation of the button or finger-piece D with the rods d and the cylinder B may be permitted without interfering with the operative connection of these rods with the sleeve or collar c'.

The cylinder B having been rotated in either direction is frictionally retained in the position to which it may have been rotated by a detent E, which, formed in the shape of a curved lever and pivoted at its lower end to one of the stands a^2, is constructed on its inner side, adjacent to the ratchet-wheel b^2, with a circular enlargement or projection e, which is normally held pressed inward in engagement with the teeth of the ratchet-wheel by the spiral spring c^8, which, connected at one of its ends with the stud on the pawl c, is attached at its other to a pin e' on the detent E, and thereby not only serves to swing the arm C backward to its rearmost position after it has been swung forward therefrom and to normally hold the pawl c in engagement with the teeth of the ratchet-wheel b^2, as before explained, but also to hold the detent in engagement with such ratchet-teeth as well.

While the rotation of the cylinder B and the holding of the same in its rotated position is thus effected, the limit of its rotation by the action of the pawl c to space the distance between the successive lines may be controlled in various ways. I prefer, however, to control it from the stop F, which is pivoted to the stand a^2 in the path of movement of the pawl and is provided with three several faces f, f', and f^2, which are respectively located at different distances from its axis of rotation. As thus constructed and arranged, this stop F may be rotated about its pivot f^3 to bring any one of its three several faces in the line of movement of the pawl, and thereby allow of the swinging movement of its carrying-arm C from the sleeve or collar c' and of the travel of the pawl to a greater or lesser distance by a handle f^4, with which the stop F is provided. When this stop is so rotated as to bring its face f in line with the movement of the pawl, the travel of this pawl will be limited to the distance of one tooth of the ratchet-wheel b^2, and the spaces between the successive lines of type-writing will be of that width. On the other hand, when this stop is so rotated upon its pivot as to bring its face f' in the line of movement of the pawl then the travel of the pawl will be limited to a distance of two teeth of the ratchet-wheel, and the spaces between the successive lines of type-writing will be increased to that width, while when the stop F is so rotated as to bring its face f^2 in line with the pawl then the travel of the latter will be limited to the distance of three teeth of the ratchet-wheel b^2 and the successive lines of type-writing will be disposed at that distance apart. Thus, as will be seen, by simply rotating this stop in one or the other directions about its pivot, so as to bring one or the other of its faces into the line of movement of the pawl the distance between the successive lines of type-writing may be varied and controlled as may be desired. The forward movement of the pawl c being thus limited by the stop F, its backward movement is also limited by a stop-pin a^8, which is secured in and projects outward from the stand a^2 in the line of movement of the pawl in its backward travel and which in addition to serving as a stop to limit its backward movement also serves to raise the pawl from engagement with the teeth of the ratchet-wheel when the pawl approaches its backward limit of movement, whereby to allow of the rotation of the cylinder B in either direction by the hand of the operator applied to the knob b' or otherwise. To insure of this lifting of the pawl from the teeth of the ratchet-wheel when the former is moved backward by the action of the spring

c^6, I provide the pawl in its forward end with a notch c^8, which is constructed with downwardly and inwardly inclined side walls that are adapted to engage with and ride up over the pin a^8 when the notch c^8 is brought in contact therewith, and thereby raise the pawl from engagement with the ratchet-wheel, as shown.

With the paper-supporting cylinder B and the carriage A, upon which it is mounted, are employed suitable feed-rolls h and a sheet-metal paper-rest H, in which the feed-rolls are journaled. Of these the paper-rest is mounted upon eccentrics i, which are formed in a shaft I, that is journaled in the stands a^2 and is provided on one of its ends with a lever i', by means of which it may be oscillated, and the rest, with the feed-rolls journaled therein, moved toward and away from the cylinder B when desired to place a sheet of paper or other material beneath the roller and engage it therewith in the type-writing operation. These devices, however, constitute no part of my present invention, and hence require no further description herein.

From the foregoing it will thus be seen that I provide simple and convenient means by which the rotation of the cylinder B is effected in the operation of returning the carriage to the required position to commence a new line and the amount of such rotation limited and controlled, which while efficient in operation and easy of movement is at the same time cheap of construction and not liable to get out of repair.

Having now described my invention and specified the manner in which it is or may be carried into effect, I claim and desire to secure by Letters Patent of the United States—

1. The combination, with a paper-supporting cylinder, an actuating ratchet-wheel, and a shaft upon which the cylinder and ratchet-wheel are fixedly secured, of a pawl for engaging with the teeth of the ratchet-wheel, a collar or sleeve fitted to slide upon such shaft, and a bell-crank lever contacting at one of its ends with the sleeve or collar and connected at its other with the pawl, substantially as described.

2. The combination, with a paper-supporting cylinder, an actuating ratchet-wheel, and a shaft upon which the cylinder and ratchet-wheel are fixedly secured, of a pawl for engaging with the teeth of said ratchet-wheel, a collar or sleeve fitted to slide upon such shaft, a bell-crank lever contacting at one of its ends with the collar or sleeve and at its other connected with said pawl, and a spring for coöperating with such parts, substantially as described.

3. The combination, with a paper-supporting cylinder, an actuating ratchet-wheel, and a shaft upon which the cylinder and ratchet-wheel are fixedly mounted and which is provided with a knob fixedly secured thereto, of a pawl for engaging with the teeth of the ratchet-wheel, a collar or sleeve fitted to slide upon said shaft, a bell-crank lever contacting at one end with the sleeve or collar and connected at the other with the pawl, a button or finger-piece arranged outside of said knob, and rods passing through the knob and connecting the button or finger-piece with the collar, substantially as described.

4. The combination, with a paper-supporting cylinder, a ratchet-wheel, a shaft upon which both the cylinder and ratchet-wheel are fixedly mounted, and a pawl for engaging with the teeth of the ratchet-wheel, of a swinging arm to which the pawl is pivoted, a collar or sleeve adapted to slide upon said shaft, a bell-crank lever contacting at one end with the collar or sleeve and connecting at its other with the swinging arm, a knob fixedly secured to said shaft, a button or finger-piece arranged outside of such knob, and rods passing through said knob for connecting the button or finger-piece with such collar or sleeve, substantially as described.

5. The combination, with a ratchet-wheel, a pawl for engaging with the teeth of such wheel, a swinging arm to the free end of which the pawl is pivoted, and a detent for coöperating with the ratchet-wheel, of a spring connected at one end with the pawl and at the other with the detent, whereby not only is the pawl and the swinging arm moved backward to the limit of their backward movement, and the pawl forced downward into contact with the teeth of the ratchet-wheel, but the detent held in engagement with the ratchet-teeth, substantially as described.

6. The combination, with a paper-supporting cylinder, a ratchet-wheel, and a shaft upon which the cylinder and ratchet-wheel are fixedly mounted, of a pawl for engaging with the teeth of the ratchet-wheel, a swinging arm to the free end of which the pawl is pivoted, a bell-crank lever for swinging such arm forward to rotate the cylinder, means by which the bell-crank lever may be swung upon its pivot to operate the swinging arm; and a rotating stop by means of which the forward swinging movement of the swinging arm may be limited and the extent of travel of the pawl thereby varied as may be required, substantially as described.

7. The combination, with a paper-supporting cylinder, a ratchet-wheel, and a shaft upon which they are fixedly secured, of a pawl for engaging with the teeth of the ratchet-wheel, a swinging arm to which the pawl is pivoted, a bell-crank lever for swinging such arm forward to rotate the cylinder, mechanism by which the bell-crank lever may be swung upon its pivot to operate the swinging arm, and a stop for limiting the forward movement of the swinging arm pro-

vided with a plurality of faces which are disposed at different distances from its center of rotation, substantially as described.

8. The combination, with a paper-supporting cylinder, an actuating ratchet-wheel therefor, and a shaft upon which the cylinder and ratchet-wheel are fixedly secured, of a pawl provided with a notch in its forward end that is constructed with a downwardly and inwardly inclined upper wall, devices by which the pawl is carried and operated, a spring for normally holding the pawl in its retracted position, and a stop-pin with which the notch in the forward end of the pawl cooperates when the pawl is retracted to both limit the backward movement of such pawl and raise it from engagement with the teeth of the ratchet-wheel, substantially as described.

In witness whereof I have set my hand this 29th day of November, 1904.

THOMAS L. DENNIS.

Witnesses:
WM. H. APPLETON,
R. F. SWEENY.