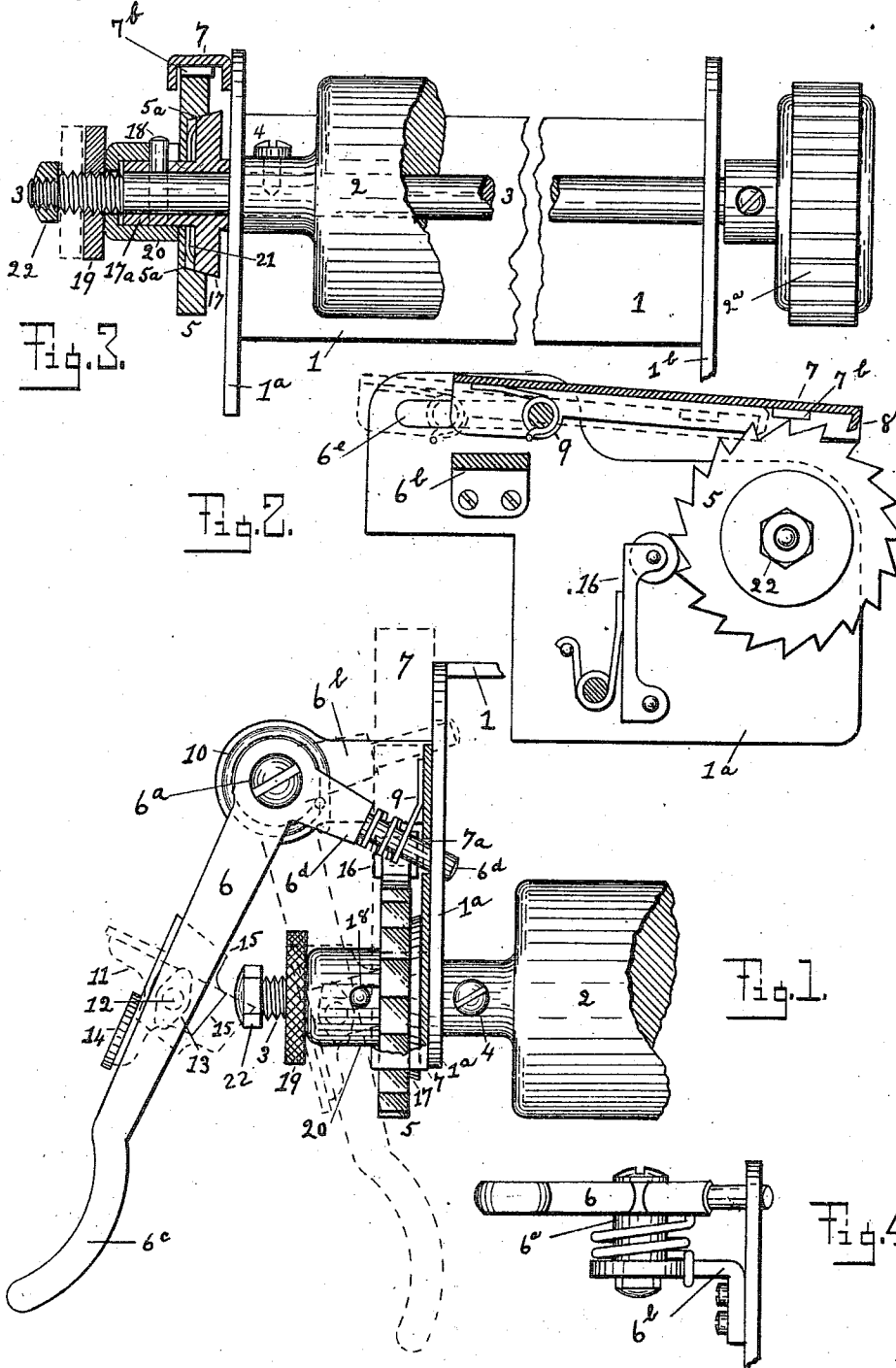


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TYPE WRITING MACHINE.
APPLICATION FILED JAN. 13, 1905.

973,352.

Patented Oct. 18, 1910.



Witnesses
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TYPE-WRITING MACHINE.

973,352.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES W. HOWELL, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to the line spacing mechanism of typewriting machines.

One object of the invention is to provide simple, inexpensive and effective means for connecting the line-space ratchet wheel to the platen, so that the platen may be released at will and rotated freely independently of the line-space wheel, for the purpose of filling in of ruled blanks, making corrections, and so forth.

Another object is to improve the construction and operation of the line-spacing lever and appurtenances, particularly with a view to low cost of construction, reduction in the number of parts, and minimizing the liability of their getting out of order.

To these and other ends, my invention consists in certain combinations of devices, construction of parts, and arrangement of members, as hereinafter set forth, and particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of the left hand end of a platen and platen frame of a typewriting machine illustrating my invention; Fig. 2 is a sectional side elevation looking from the left of Fig. 1 and omitting some of the parts; Fig. 3 is a sectional front elevation, some parts being shown larger, and others omitted, for the sake of clearness. Fig. 4 is a front elevation of the line-spacing lever and platen frame end.

1 is a portion of the platen frame, which may be of any approved construction, and comprising ends 1^a, 1^b; 2 is the platen, and 3 is the axle passing through the platen and frame. Upon the projecting right-hand end of the axle is fixed a hand wheel, 2^a, for rotating the platen. The platen 2 is secured to the axle 3 by means of set screw 4 on the platen head; carried upon the outer left-hand end of axle 3 is line-spacing ratchet-wheel 5.

An elbow or belt-crank line-space lever 6 is pivoted at 6^a upon an exterior projecting portion or bracket 6^b of the platen frame 1, so as to vibrate horizontally. One long arm

of the lever extends forwardly from the pivot, with a convenient bend at 6^c to be grasped by the operator, and a short arm 6^d projects through a slot 6^e in the platen frame toward the platen.

A pawl 7 is formed of sheet metal bent at right angles to stiffen it, and at its front end has a further bend consisting of a downwardly projecting lip thereby forming three sides of a square, so as to straddle the ratchet wheel 5 as shown in Fig. 3, to prevent lateral displacement of the pawl. At the extreme front end the pawl is bent down to form a tooth 8, which engages with the teeth of the ratchet wheel 5. The arm 6^d passes through a perforation 7^a in the rear end of the pawl. A compression spring 9 presses the pawl against the end 1^a of the platen frame, and also causes the front end of the pawl to engage the teeth of the ratchet wheel. A spring 10 returns the lever 6 with pawl 7 to normal position.

An adjustable stop 11 is pivoted to the long arm of the elbow lever 6 at 12; and a leaf spring 13 creates sufficient friction to cause the stop to stay in either of its positions. The stop is formed with an up-turned end 14, which serves as a finger-piece, and stop-faces 15 project different distances from the pivot 12; the two positions of the stop being shown in Fig. 1, one in full lines and the other in dotted lines.

When the line space lever 6 is pressed toward the right, in Fig. 1, the short arm 6^d thereof pulls pawl 7 back, and tooth 8 engages the ratchet wheel 5, and causes the latter to rotate until one of the stop faces 15 contacts with the left-hand side or face of the ratchet wheel, as shown in dotted lines in Fig. 1. The shorter stop 15 arrests the parts when the ratchet wheel 5 is rotated the space of two teeth, while the other stop acts when the ratchet wheel has moved the distance of one tooth. Upon arrest of the line-space lever by engagement of the stop with the ratchet-wheel, additional pressure against the lever returns the platen frame or carriage to the right to begin a new line. Normally the tooth 8 of pawl 7 is forward of and out of the path of the teeth of the ratchet wheel 5, as shown in Fig. 2, at which time a fender 7^b provided upon the pawl rests on the ratchet wheel, said fender being between tooth 8 and lever arm 6^d. It will be seen therefore that although pawl 7

is always in contact with the ratchet wheel 5, still in the normal position of the parts the pawl tooth 8 is forward and out of the path of the teeth of ratchet wheel, so that the ratchet wheel and platen may be rotated without interference from the tooth 8. A spring-pressed detent 16 engages the ratchet wheel 5.

The right-hand face of ratchet wheel 5 is hollowed out to form an internal cone 5^a, to coöperate with a cone 17 which is provided with a hub 17^a and fixed to axle 3 by pin 18. The left-hand end of the axle is threaded for the reception of a thumb-nut 19. A collar or cap 20 slides loosely in axial direction along the hub 17^a, so that when the thumb-nut is tightened it presses the cap 20 against the ratchet wheel 5, forcing the latter against the cone 17, thereby locking the cones, so that the ratchet wheel is positively connected to the axle 3, and any rotation of the ratchet wheel 5 will be imparted to the platen 2. To release the ratchet wheel, the nut 19 is loosened by turning it in the opposite direction, and a leaf-spring 21 between the ratchet wheel 5 and cone 17, effects their separation. A small nut 22 threaded onto the tip of the shaft, serves to retain the thumb-nut 19. When the ratchet wheel is so released, the platen can be turned by hand wheel 2^a, so as to bring any portion of its surface to the printing line. It will be noticed that the spring detent 16 remains in engagement with the ratchet wheel, and although the latter does not turn with the platen, still the pressure exerted by the spring detent 16 makes friction between the line-space wheel and the hub 17^a, thereby avoiding accidental movements of the platen incident to the printing and letter-spacing movements of the machine. The spring 21 may also contribute to this result, so that the writing may proceed as usual even when the line-space wheel is released from the platen. The cones cause a positive connection although comparatively little pressure is sufficient to lock them; and the angle of the cones is such that they will readily disengage. While I do not wish to confine myself to any particular angle, I have found that about 8° give the best results.

While the stop mechanism, for limiting the motion of the line spacing mechanism, is shown as capable of only two adjustments, it is evident that three or more stops may be provided.

It should be understood that the means for connecting and releasing the ratchet-wheel may be applied independently of the remaining line-spacing mechanism shown and described, and likewise the latter may be applied with any construction of ratchet wheel. Various other changes may be made without departing from the spirit of my invention.

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

1. In a typewriting machine, the combination of a platen, a line-space ratchet-wheel, a line-space elbow-lever pivoted in rear of the platen axis, one arm of said lever extending forwardly from its pivot, and a pawl loosely mounted upon the other arm of said lever and extending forwardly to said wheel, and provided with means to straddle the latter.

2. In a line-spacing mechanism, the combination of a platen, an axle to which it is secured, a platen-rotating hand-wheel connected to said axle, a ratchet-wheel, means for connecting or disconnecting said ratchet-wheel with the axle, a lever, a pawl loosely mounted on the lever, and a fender provided on said pawl, for preventing the pawl tooth from interfering with the free rotation of said ratchet-wheel.

3. In a line-spacing mechanism, the combination of a ratchet-wheel, a pawl engaging therewith, a horizontally swinging elbow-lever operatively connected to said pawl and having a forwardly extending arm, and an adjustable stop mounted on said elbow-lever, to engage the face of the ratchet-wheel.

4. In a line-spacing mechanism, the combination of a platen, an axle therefor, a line-space ratchet-wheel, means for connecting and disconnecting said ratchet-wheel with the axle, a line-space lever, a pawl connected to the lever, and an adjustable stop coöperating with said ratchet-wheel to regulate the line-spacing movement.

5. In a line-spacing mechanism, the combination of a platen, a line-space ratchet-wheel, a line-spacing lever, and a pawl loosely connected to the lever; said pawl being constructed of a single piece of sheet metal bent so as to bestride the ratchet-wheel, and having a tooth bent downwardly to engage the ratchet-wheel, and having a fender to hold its tooth normally out of the ratchet-wheel.

6. The combination of a platen frame having ends, a platen journaled in said ends and provided with a line-space wheel, a bracket upon the left-hand end, a line-space elbow-lever mounted upon said bracket outside of the platen-frame in rear of the platen axis and comprising a long forwardly extending arm and a short arm extending through a slot in said left-hand end, a pawl connected to said short arm and extending forwardly therefrom to hook into the teeth of the line-space wheel, and adjustable means for regulating the platen-rotating movement of said lever; the return movement of said lever being limited by the engagement of said short arm with the end of said slot.

7. The combination of a platen frame

having ends, a platen journaled in said ends and provided with a line-space wheel mounted outside of the left-hand end, a line-space lever pivoted upon a part of the platen frame outside of said left-hand end and having an arm extending toward the platen, a compression spring coiled around said short arm, and a pawl having a perforation through which said short arm extends; said pawl lying outside and along said left-hand end and above said line-space wheel and hooking into the teeth of the latter, said spring being contrived to press said pawl against said left-hand end and also to press the pawl into engagement with the line-space wheel, and the pawl having portions loosely bestriding said line-space wheel to prevent lateral displacement of the pawl.

8. The combination of a platen frame having ends, a platen journaled in said ends and provided outside of the left-hand end with a line-space wheel, a bracket projecting outwardly from said left-hand end, a line-space lever pivoted upon said bracket and comprising a long forwardly-extending arm and a short arm projecting through a perforation in said left-hand end toward said platen, a pawl lying between said line-space wheel and said left-hand end and having a perforation through which said short arm extends, a compression spring upon said short arm confining said pawl against said left-hand end, and an adjustable stop upon said forwardly-extending arm in position to engage the face of said line-space wheel; the return stroke of said lever being limited by the engagement of said short arm with one end of said slot.

9. The combination with a revoluble platen and a line-space wheel, of a line-space lever, a returning spring therefor, a pawl extending from said lever to said line-space wheel, and a fender provided upon said pawl for disengaging the pawl-tooth from the line-space wheel during the final portion of the return movement of said lever.

10. The combination with a revoluble

platen and a line-space wheel, of a manually operable reciprocating line-space actuator, a returning spring therefor, a hooked pawl extending from said actuator to said line-space wheel, for pulling the latter around, a fender provided upon said pawl between its tooth and said actuator, for disengaging the tooth of the pawl from the line-space wheel during the final portion of the return movement of said actuator; and means for regulating the platen-rotating stroke of said actuator.

11. In a typewriting machine, the combination with a platen and platen axle, of a line-space wheel, a clutching cone fixed upon said axle, a corresponding internal cone being provided upon said line-space wheel, a hub upon said axle cone, a cap loose upon said hub and bearing against said line-space wheel, a pin-and-slot connection between said hub and said cap, a nut threaded upon the end of said axle to bear against said cap, and a retaining nut threaded upon the tip of said axle.

12. In a typewriting machine, the combination with a platen fixed upon an axle journaled in a platen frame, of a binding head fixed upon the axle and having a collar, a line-space wheel loose upon said collar, and a nut to force the line-space wheel against the binding head.

13. In a typewriting machine, the combination with a platen fixed upon an axle journaled in the platen frame, of a binding head fixed upon the axle and having a collar, a line-space wheel loose upon said collar, a nut to force the line-space wheel against the binding head, and means to limit the movement of the nut away from the line-space wheel.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. HOWELL.

Witnesses:

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LEE S. BURRIDGE.