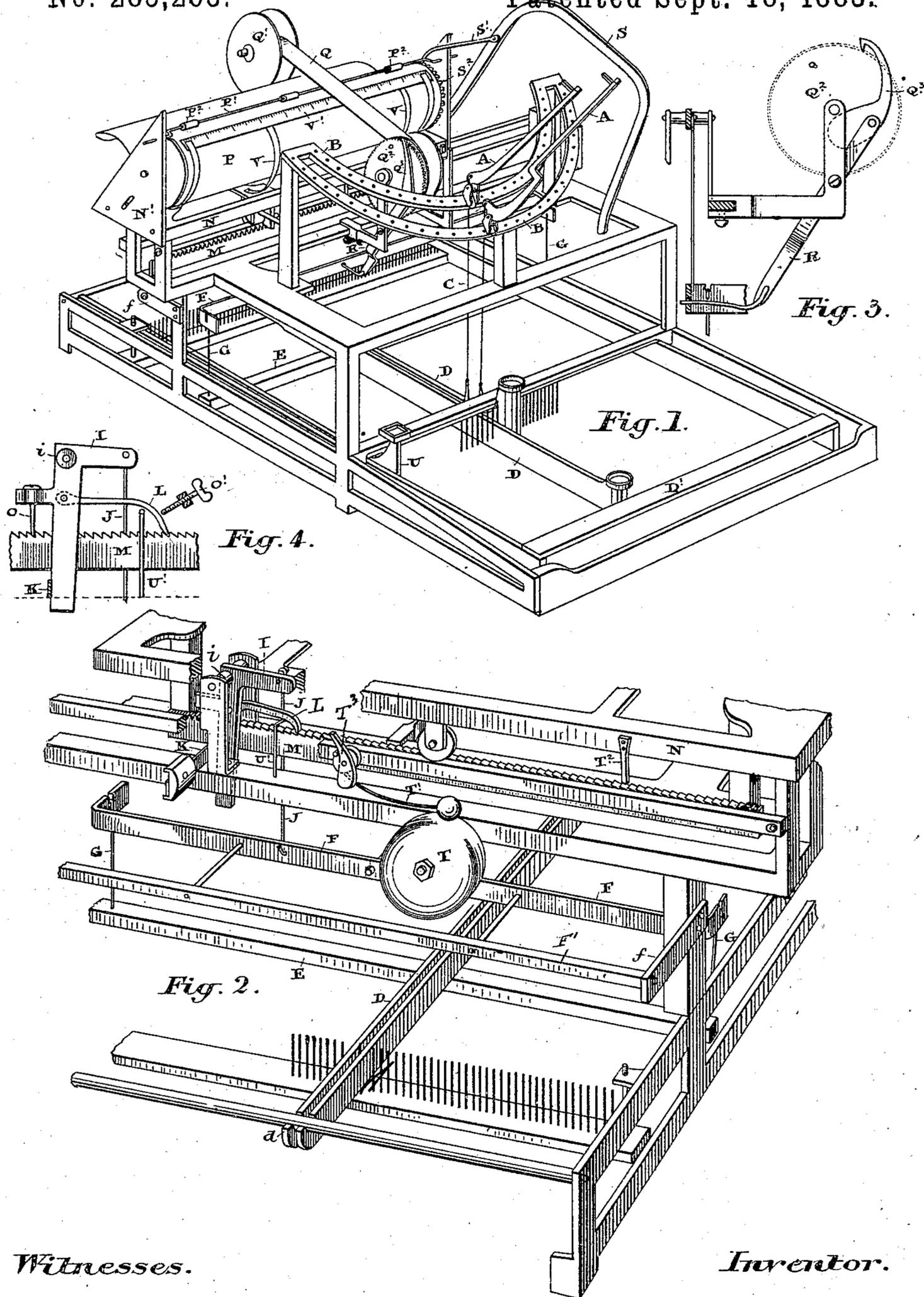


(No Model.)

E. E. HORTON.
TYPE WRITER.

No. 285,265.

Patented Sept. 18, 1883.



Witnesses.

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EDWARD E. HORTON, OF TORONTO, ONTARIO, CANADA.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 285,265, dated September 18, 1883.

Application filed March 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD ELIJAH HORTON, a subject of the Queen of Great Britain, residing at the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The object of the invention is, first, to arrange the type-writing mechanism in such a manner that the printing shall be visible to the operator during the process of writing; secondly, to devise mechanism by which the paper-carriage shall have imparted to it an even intermittent movement for spacing the letters with regularity and precision; and, thirdly, to devise simple mechanism for imparting a regular intermittent movement to the ink-ribbon.

It consists, first, in connecting the type-bars to concentric arcs at such an angle to the horizontal line of the cylindrical platen that the type, while striking the ink-ribbon against the surface of the paper, will not form any obstruction to the view of the letters thus imprinted on the paper.

It consists, secondly, in a pawl-and-ratchet movement operated by the movement of the key-levers or spacing-bars, and provided with a stop for preventing the paper-carriage moving farther than the required regular spacing distance between the letters; and, thirdly, it consists in operating the ink-ribbon roller by pawl-and-ratchet movement connected to and operated by the same mechanism from which the intermittent movement to the spacing mechanism is derived.

Figure 1 is a perspective front view of a type-writing machine provided with my improved mechanism. Fig. 2 is an enlarged perspective back view of a portion of a type-writing machine provided with my improved mechanism. Fig. 3 is a detail exhibiting the mechanism by which the ink-ribbon rollers derive their intermittent rotary movement. Fig. 4 is a detail of the pawl-and-ratchet mechanism for imparting the regular movement to the paper-carriage.

As will be noticed, the drawings are, in a

measure, merely skeleton views of the machine, only sufficient portions of the machine to exhibit my improvements being shown. For instance, I only show two type-bars, it being of course understood that the number of type-bars may be regulated as in other type-writing machines, the other portions of the machine being likewise regulated.

A are two of the type-bars, standing on two concentric arcs, B, one bar being longer than the other in order that both may reach the center of the arcs, though at different distances from it. A single arc or more may be used as a bed for the type-bars, as may be thought convenient or desirable. Each type-bar bears a type, and to the same side of it to which the type is affixed is attached a rod, C, at a point between its fulcrum and the lower end, by means of which the type-bar is connected with a lever, such as D. On the end of each of these levers that is directed toward the operator is a key bearing a letter or other symbol corresponding with that on the type affixed to the type-bar with which it is connected. Each lever has its fulcrum *d* at the end farthest from that to which the key is attached, and rests upon a suitable spring.

E is a bar suspended from the swinging frame F, and held against the bottom of all the key-levers by means of the suspending-rods G. The swinging frame F is supported on a rod, F', pivoted in the main frame of the machine in a bracket, *f*, or forming part of the main frame of the machine. The free side of the frame F is connected to the bell-crank I by the rod J. This bell-crank is pivoted at *i* in lugs on the main frame.

K is a spring pressing against the vertical arm of the bell-crank I. A pulling spiral spring or any other spring to effect the purpose might be used instead. On the vertical arm of the bell-crank I, I pivot a pawl, L, the free end of which is arranged to fit into the teeth of the rack M. This rack is attached to the paper-carriage N. Owing to the connection described between the bell-crank I and key-levers D, each downward movement of a key-lever throws the vertical arm of the bell-crank out of the perpendicular, carrying with

it the pawl L one tooth. When the pressure is removed from the key-lever D, the spring K forces the vertical arm of the bell-crank back into a perpendicular position, and owing to the connection described between the pawl L and the rack M the latter is moved forward a corresponding distance. In order to prevent the rack M moving more than the distance represented between two teeth, I provide a pin, O, attached to an arm on the back of the vertical arm of the bell-crank. This pin is arranged to fit between the teeth or on top of the rack M when the vertical arm is in a perpendicular position.

As an equivalent to the locking device just described, I show in Fig. 4 a set-screw, O', passing through a fixed point in the frame of the machine. This set-screw may be so adjusted as to come in contact with the end of the pawl L at the moment that the vertical arm has resumed its perpendicular position, thereby locking the pawl into the rack and preventing the latter from moving farther.

The foregoing description describes mechanism by which the paper-carriage is moved forward a space at each blow given to a key-lever. When it is desired to move the carriage a space without imprinting a letter on the paper, the spacing-key D', the pivoted arm of which rests upon the bar E, is employed similarly to the other key-levers. The paper-carriage N runs upon rails in the ordinary manner, and supports by means of the end pieces, N', the cylindrical platen P.

P' is a crank-rod provided with friction rollers P², the object of which is to hold the paper down upon the platen, above the point at which the type comes in contact with the ink-ribbon Q.

Q' represents the ink-ribbon roller or spool.

Q² is a ratchet-wheel, with which one of the ribbon rollers or spools is connected, in order that motion may be given to it by means of the pawl Q³. (More clearly shown in Fig. 3.)

This pawl is pivoted on the lever R, which in its turn is pivoted on the frame of the machine. The bottom of the lever R is connected to the free side of the swinging frame F; consequently each downward movement of this frame imparts, through the lever R and pawl Q³, a rotary movement to the ratchet-wheel Q², thereby moving the ink-ribbon a short distance at each stroke of the type-bar.

S is a lever by means of which the pawl S' is made to work in the teeth of the ratchet-wheel S², affixed to the end of the platen, and by means of which, also, the paper-carriage may be moved along the rails upon which it runs.

T is a bell.

T' is a hammer, with a piece, T³, pivoted on the top in such a way that when the lug T², attached to the paper-carriage, comes in contact with it from one side it moves only through the hammer being swung upward;

but when the carriage is going in the opposite direction it swings downward enough to admit of the lug passing freely over it.

U is a key, the lever of which rests upon the bar E, but is so arranged that it may be pressed farther down than any of the other levers resting on the same bar. Consequently, when the key U is pressed upon, the vertical arm of the bell-crank I is carried farther back than when either of the other key-levers is operated.

A lifting-rod, U', is placed behind and below the pawl L, so that when the bell-crank is carried farther back than is necessary to move the pawl one tooth the pawl comes in contact with the lifting-rod U', and is thus held clear of the teeth of the rack M, permitting the paper-carriage to be moved freely to and fro by means of the lever S or otherwise.

The manner of operating the machine is as follows: The paper to be written upon is inserted between the platen P and an ordinary roller behind it, and then the platen is turned until the top of the paper passes, by the aid of the guides V, above the scale V'. The crank-rod P' is then raised and the top of the paper placed underneath it. The operator then proceeds to work the machine in the ordinary way by means of the keys D.

In a separate application, Serial No. 41,143, I have described and claimed a fixed flat platen at an angle to the horizontal plane of a machine, having an arc or arcs of a circle or circles also at an angle to the machine, and I do not claim such construction in this application.

What I claim is—

1. In a type-writing machine, the combination, with the paper and platen carriage N and the rack-bar M, secured to and moving with said carriage, of the bell-crank I, carrying stop o, pivoted to the main frame, the pawl L, connected with said bell-crank and engaging directly with the rack-bar, a spring for operating the bell-crank in one direction, and the frame F, connected to said bell-crank, and connections, substantially as described, between the frame F and the keys for moving the bell-crank in the opposite direction, substantially as and for the purpose specified.

2. In a type-writing machine, the combination, with the carriage N, of the rack-bar M, secured to and moving with the same, the pawl L, engaging directly with the rack-bar, the bell-crank I, pivoted to the main frame, carrying stop o, the spring K, the rod J, the swinging frame F F', the rods G, the bar E, and the operating-keys, substantially as described.

3. In a type-writing machine, the combination, with the carriage rack-bar M, of the bell-crank I, provided on one side with a pivoted pawl, L, and on the other side with an arm

carrying a stop, *o*, and devices, substantially as described, for operating the bell-crank, as and for the purpose specified.

5 4. In a type-writing machine, the combination, with the carriage rack-bar M, pawl L, and mechanism, substantially as described, for operating said pawl, of the fixed lifting-rod *U*, constructed to raise the pawl from the

rack when said pawl is carried farther back than usual, to allow the rack-bar to slide freely; 10 substantially as set forth.

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Witnesses:

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