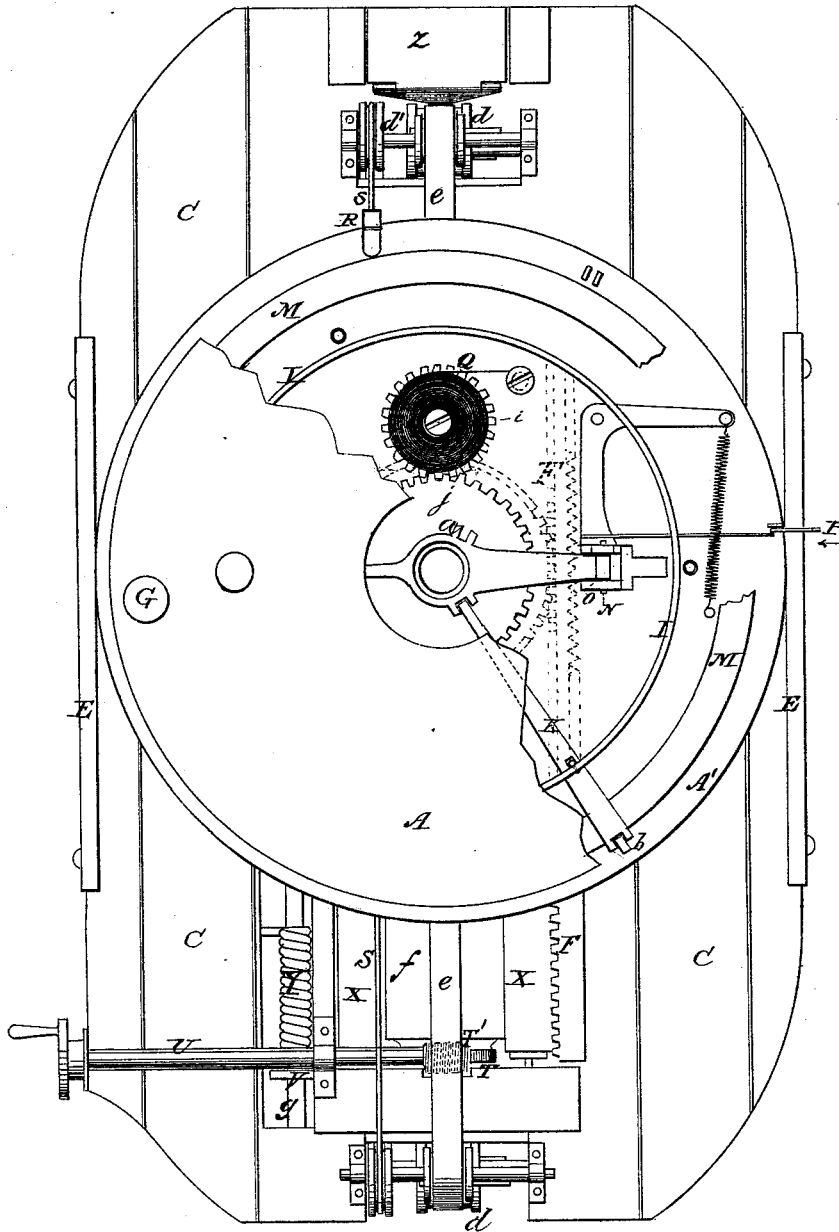


C. T. WARD.
Type-Writing Machine.

No. 218,148.

Patented Aug. 5, 1879.

Fig. 1



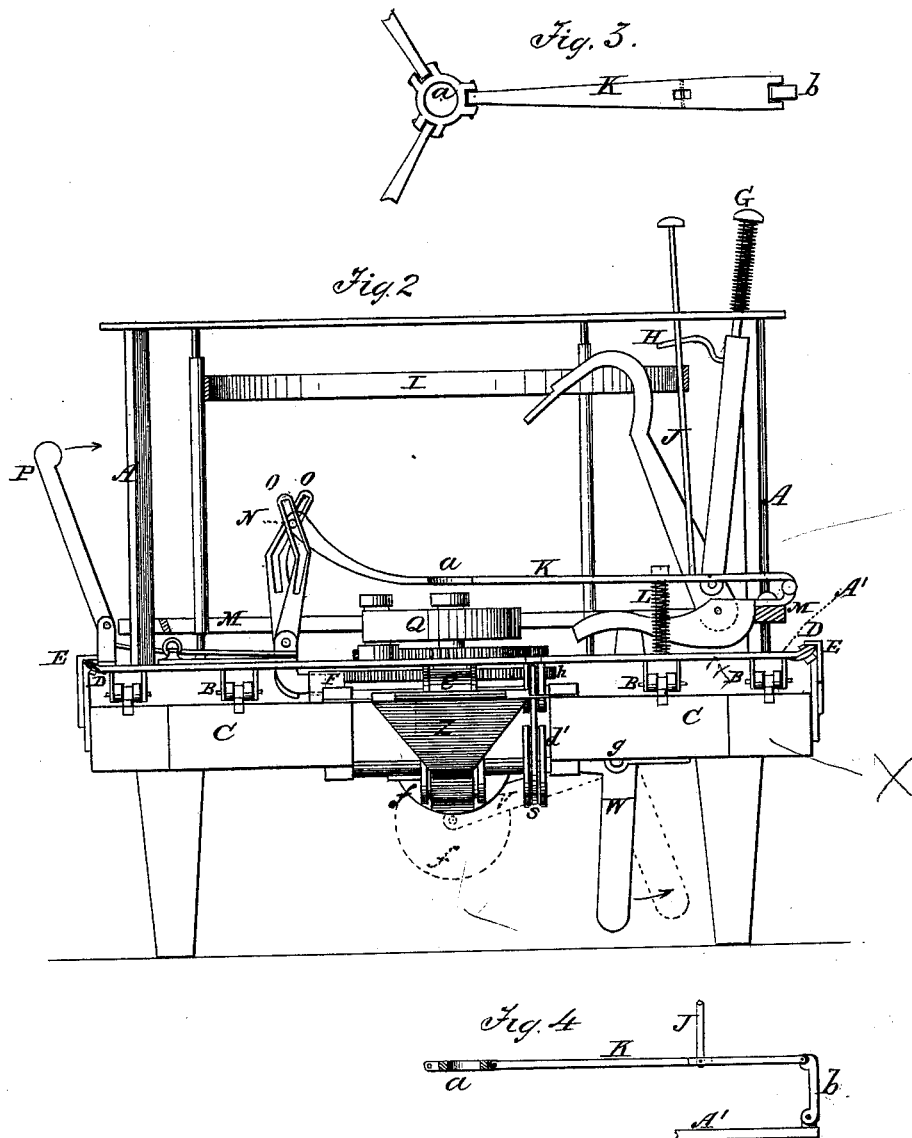
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Inventor
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UNITED STATES PATENT OFFICE

CALEB T. WARD, OF NEW YORK, N. Y.

IMPROVEMENT IN TYPE-WRITING MACHINES.

Specification forming part of Letters Patent No. **218,148**, dated August 5, 1879; application filed October 21, 1878.

To all whom it may concern:

Be it known that I, CALEB THEOPHILUS WARD, of the city, county, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

The object of this invention is to provide a neat, cheap, and portable type-writer, capable of producing perfect work, the type-carriage being so arranged that it may be shifted backward or forward at will, and the inking-ribbon so arranged that it may be shifted out of line, so as to leave an unobstructed view from the top down to the impression-roller, which enables printed forms to be filled out with perfect ease; the construction and operation of my invention being described as follows:

Figure 1 represents a plan, part being broken away to show its construction more clearly. Fig. 2 is an end elevation of the same. Fig. 3 is a detail view, showing construction of central ring and its connections with the three hinged arms. Fig. 4 is a side view of the same.

Similar letters of reference indicate corresponding parts.

In the case here presented the type-carriage A is supported by small wheels B, which run upon the tracks or in grooves on the stationary bed-plate C; and in order to prevent the said type-carriage lifting up from the rails or grooves, I have two or more small roller-wheels, D, arranged on the periphery of the lower disk, so as to bear against the finished angle-strips E E, which are set on the sides of the bed-plate.

The type-carriage is driven by means of a suitable spring, Q, the guiding-post of which carries a gear, *i*, which meshes in the upper central gear-wheel, *j*, and this latter wheel is keyed or otherwise rigidly attached to the hollow stud carrying the lower central gear-wheel, *h*, which meshes in the rack F on the stationary bed-plate C.

Each key G, representing a letter or numeral, is attached to a rod which is provided with a pin or projection, H, which bears upon and serves to push the ring I downward.

It will here be observed that this ring is

rigidly attached to and supported by three guide-rods, J, which rest upon three hinged arms, K, supported by springs L, whereby the ring I is always kept in a horizontal position. The said arms have a ring or central opening, through which and a corresponding opening in the gears *j h* the type-arm passes in making an impression. The aforesaid arms K are hinged to the ring M, and the opposite or free end is provided with a pin, N, which passes through the slots in the upper sections of the pawls O O, which operate alternately on the rack F, one being engaged with it, while the other is disengaged, so that the carriage is moved the necessary distance to properly space the letters at each complete movement of the arm K. These slots are of such shape that when the pin N on the arm K reaches the elbow or bent portion of the pawl-links the lower parts of both links are brought parallel to each other, thus giving a rest while the type is striking, and thereby prevents the type from blurring or smearing the paper by pressure upon the ribbon.

In order to insure a true parallel downward motion for the ring *a*, I propose having the arms K connected with the plate A' by a double hinge, *b*, as clearly shown in Figs. 3 and 4.

Upon reaching the end of a line, the type-carriage is moved back to the desired position by first pressing the lever P in the direction of the arrow, so as to disengage the pawls O O from their hold in the rack, and in the course of movement the spring Q will be re-wound, so as to be again ready for action.

R is a sliding catch attached to the lower disk of the type-carriage, through which a cord, S, passes. This cord passes around pulleys on the same shafts as the drums *d*, around which the endless inking-ribbon *e* runs. The catch R is so constructed as to slip over the cord when the carriage is traveling forward, thus allowing the inking-ribbon to remain stationary while the printing or writing is being done, but grips the cord on the return movement of the type-carriage, and thus shifts the ribbon so as to present a fresh surface for every line.

On one end of the impression-roller there is a worm-wheel, T, which is acted upon by the

worm T' on the end of the shaft U. The said impression-roller is hung between the arms V V, for convenience of inserting a fresh sheet of paper when necessary, which is accomplished as follows: First shift the inking-ribbon by sliding its drums along their feathered shafts. Then the impression-roller, having nothing in its way, may be drawn down to the position indicated by dotted lines in Fig. 2 by pulling the arm W in direction of arrow.

X X are two small rollers, against which the impression-roller bears, thereby holding the paper perfectly smooth and tight while printing. The aforesaid impression-roller is held firmly in position by means of springs Y Y.

The ribbon is kept sufficiently moistened as it travels past the ink-reservoir Z at one end of the bed-plate. The said reservoir is made preferably of tapering form, and has an aperture in its bottom facing the ribbon. The said reservoir is packed with felt or other spongy substance capable of holding ink in absorption; consequently there will be no danger of spilling ink, and much time saved by this automatic method of inking the ribbon.

One great advantage in this machine consists in being able to get a clear view of the precise part of any line in the course of printing by shifting the endless ribbon to one side, there then being a clear central opening through to the impression-roller. By this arrangement the operator is enabled to fill out printed forms, make corrections when necessary, &c., the type-carriage being so connected with the rack by the pawls that the same may be disconnected at any time for convenience of moving the carriage backward or forward.

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

1. The combination, in a type-writing machine, of a traveling carriage, A, keys G, arms K, pawls O O, rack F, gearing *h i j*, and springs

Q, arranged to operate substantially as described.

2. The combination, in a type-writing machine, of the type-carriage A, spring Q, gear *i*, upper and lower centrally-perforated gears, *j h*, and rack F, all constructed and arranged to operate together, as shown and described.

3. The combination of the keys G, pins H, ring I, guide-rods J, and hinged arms K, all arranged and operating substantially as described.

4. The hinged arms K, in combination with the central ring, *a*, constructed, arranged, and operating in the manner and for the purpose substantially as described.

5. The combination, in a type-writing machine, of the self-adjusting central impression-roller, *f*, arms V and W, shaft *g*, spring Y, worm-wheel T, worm T', and shaft U, all arranged and operating substantially as described.

6. The combination, in a type-writing machine, of a suitably-supported endless inking-ribbon, *e*, with the endless cord *s* and carriage provided with a catch, R, said catch being constructed to slide over the cord when traveling in one direction, and to gripe it on its return movement, substantially as described.

7. The combination, in a type-writing machine, of an inking-ribbon with an inking-box, Z, filled with sponge or similar absorbent material, having an aperture at or near the bottom facing the ribbon, substantially as and for the purpose specified.

8. The combination, with the carriage of a type-writing machine, of the slotted pawls O, hinged arms K, pin N, and rack F, substantially as and for the purpose specified.

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Witnesses:

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