(No Model.)

G. W. N. YOST.

TYPE WRITING MACHINE.

No. 428,294. Patented May 20, 1890.

Fig. 5.

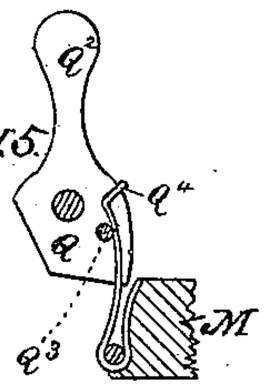


Fig. 4

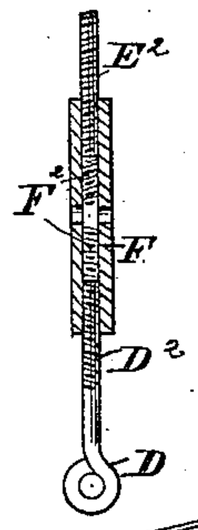


Fig. 6

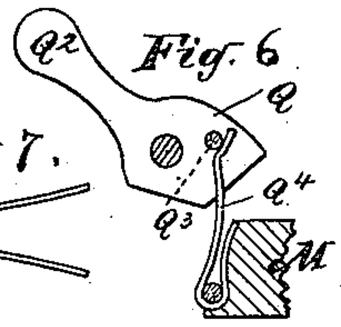


Fig. 7.

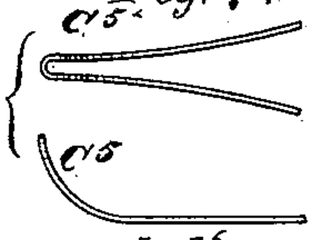


Fig. 1.

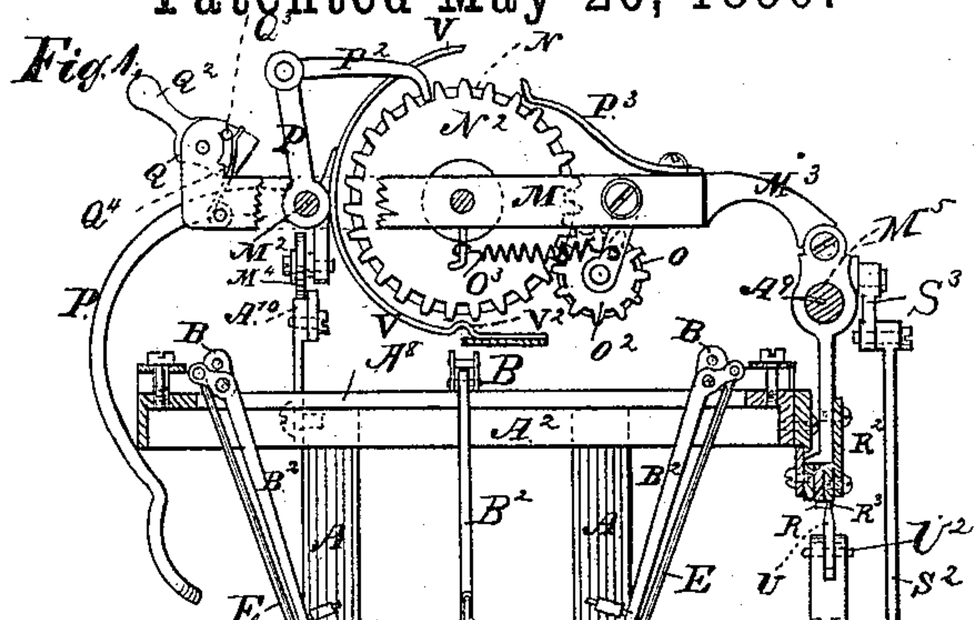


Fig. 8.

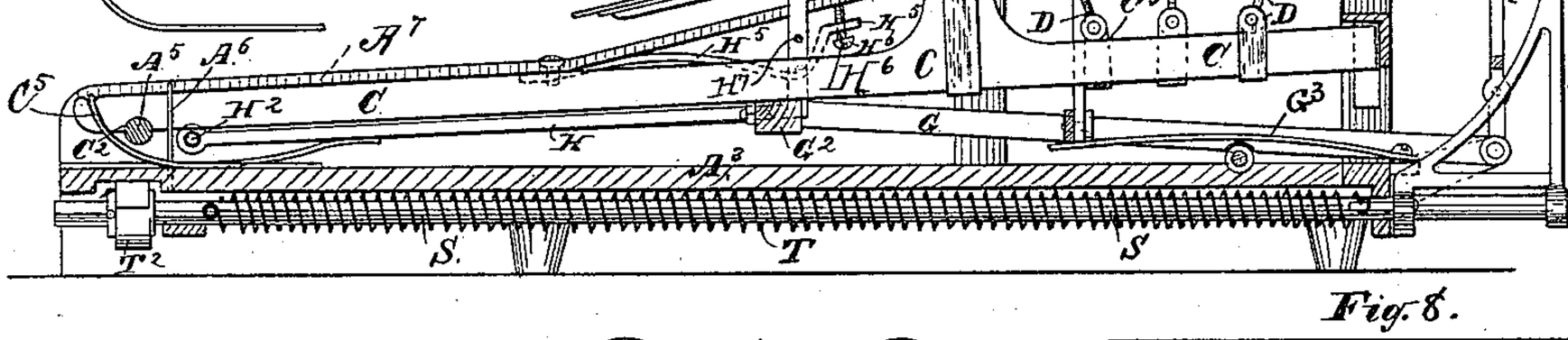


Fig. 2.

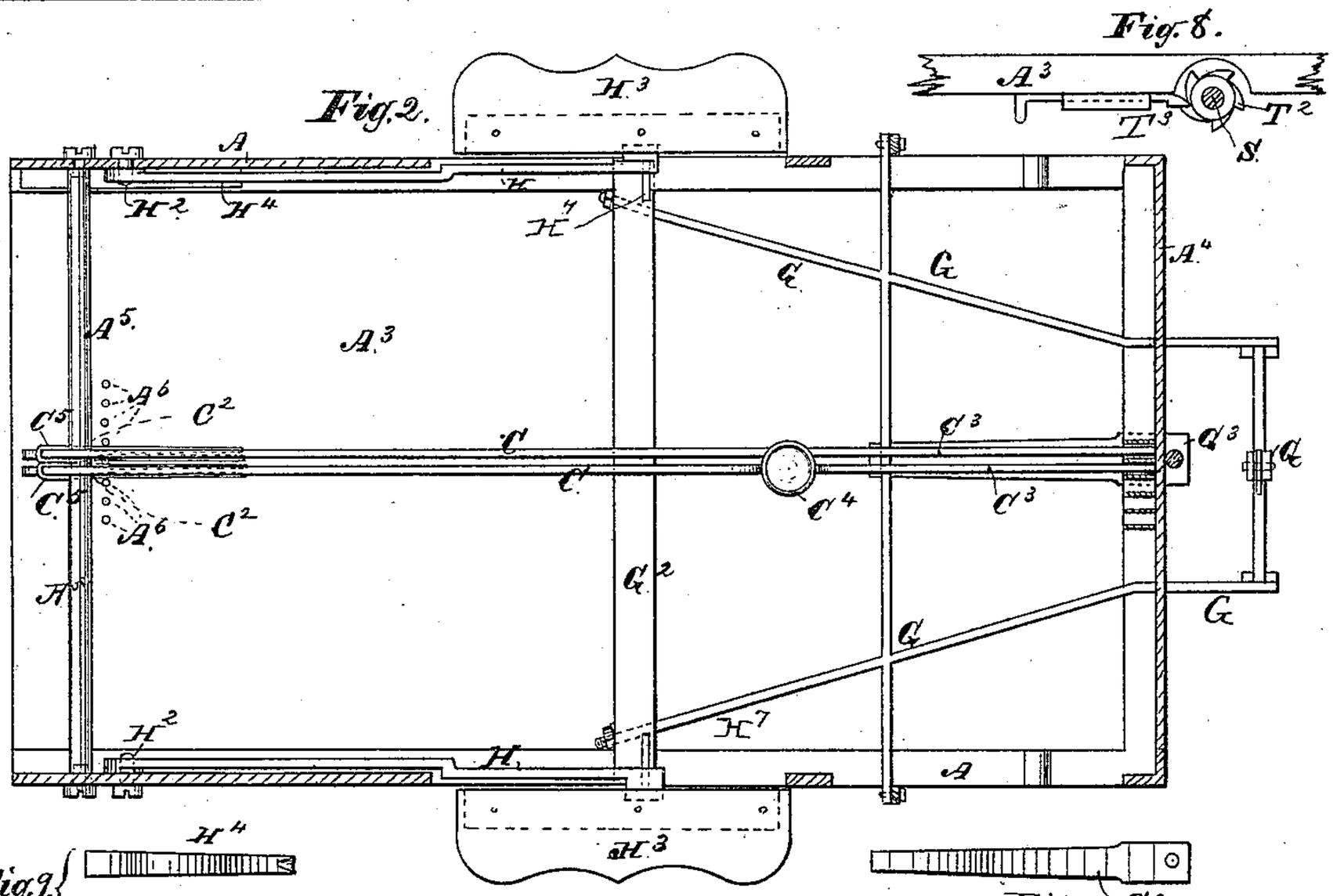
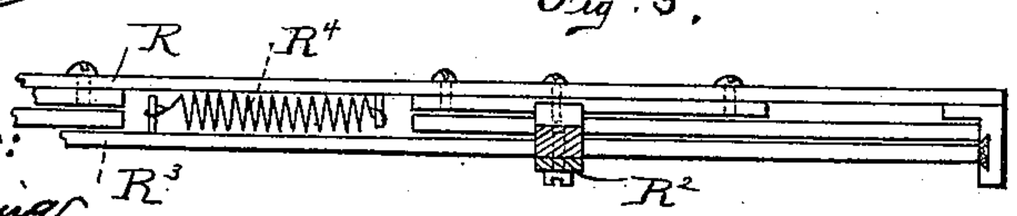


Fig. 9.

Fig. 10.

Fig. 3.



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By his Atty,
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UNITED STATES PATENT OFFICE.

GEORGE W. N. YOST, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN WRITING MACHINE COMPANY, OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 428,294, dated May 20, 1890.

Application filed July 12, 1880. Serial No. 13,384. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. N. YOST, of the city, county, and State of New York, have invented Improvements in Type-Writing Machines, of which the following is a specification.

The invention is illustrated and described in the accompanying drawings and following description thereof; and it consists in the combinations of devices hereinafter more fully described, and particularly pointed out in the appended claims.

Of the drawings, Figure 1 represents a longitudinal vertical sectional view of a type-writing machine which embodies the invention; Fig. 2, a top view of the under part thereof, and the remaining eight figures views of detached parts thereof.

Of the drawings also, A represents the main-frame side plates of a type-writing machine which embodies the invention; A^2, the top plate on the side plates A; A^3, a board or plate across on the bottom of the side plates A; A^4, a bar at the rear and bottom across on the side plates A; A^5, a rod or fulcrum at the front across in the side plates A; A^6, a series of guide-pins extended up from the bottom plate A^3 in rear of and near to the fulcrum A^5 in line between the side plates A; A^7, a cover or plate over the front ends of the side plates A; A^8, a ring or circular orifice in the top plate A^2; A^9, a rail across over the rear part of the top plate A^2; A^{10}, another rail across over the front part of the top plate A^2; B, a hanger or series of hangers on the top plate A^2, around the orifice A^8; B^2, a type-bar hinged to each hanger B; C, a long lever or series of levers, each between two guide-pins A^6 within the side plates A; C^2, a bearing in the fore end of each long lever C, over and on the fulcrum A^5; C^3, a connecting-point on the hind end of each long lever C; C^4, a type-key or finger-key on each long lever C between the bearing C^2 and connecting-point C^3; C^5, a wire loop-spring astride the fore end of each key-lever C and extended down in front and under and to the rear of the fulcrum A^5 on the bottom plate A^3; D, a swivel attached to each key-lever connecting-point C^3; D^2, a screw-thread on the upper end or shank of each swivel D; E, a connecting-rod attached to each type-bar B^2 and extended down to the corresponding swivel D; E^2, a screw-thread on the lower end of each connecting-rod E; F, a sleeve on the contiguous ends of each corresponding swivel D and connecting-rod E; F^2, an internal screw-thread in each end of each sleeve F; G, a right-angled vibratory frame hinged at the bottom and rear between the side plates A, with one part extended toward the front under the key-levers C and the other part extended toward the top plate A^2; G^2, a bar on the fore end of the vibratory frame G across, under, and up against the key-levers C; G^3, a spring on the bottom plate A^3 and pressed up against the vibratory frame G; H, another long lever on each side of the type key-levers C and extended from the front back to and on the vibratory-frame cross-bar G^2; H^2, a pivot in the fore end of each side lever H; H^3, a finger-key or space-key on each side lever H abreast of the key-lever type-keys C^4; H^4, a spring under and pressed up against each side lever H; H^5, a supplementary spring under the rear part of each side lever H; H^6, an adjusting-screw in each supplementary spring H^5; M, a carriage on the rails A^9 A^{10} over the top plate A^2; M^2, the front side bar of the carriage M; M^3, the rear side frame of the carriage M; M^4, a traveling wheel on the carriage front side bar M^2, extended down to and on the top plate front rail A^{10}; M^5, slide-bearings in the carriage rear side frame M^3, and on and over the rear top-plate rail A^9; N, a cylindrical platen, in bearings, on the carriage M across over the top-plate orifice A^8; N^2, a spur-wheel on the end of the platen N; O, a small roller on the carriage M in rear of the platen N; O^2, a small spur-wheel on the end of the small roller O, meshed into the platen spur-wheel N^2; O^3, a spring attached to each end of the small roller O and to the carriage M, and adapted to press the roller against the platen N; P, a combined lever and handle hinged to the carriage front side bar M^2, which is bent and has one end extended toward the rear and the other down in front toward the key-levers C; P^2, a driving-ratchet hinged on the upper end of the handle-lever P and extended into the platen spur-wheel N^2; P^3, a holding-ratchet on the carriage M behind the

platen N and extended into the platen spur-wheel N^2; Q, a cam-like regulator hinged on the carriage M and extended over and on the handle-lever P; Q^2, a handle on and extended up from the regulator Q; Q^3, a pin or lug on the regulator Q and extended out laterally parallel with the axis of the platen N; Q^4, a curved vertical spring, of which the bow or convex is on the front side behind and pressed against the regulator-lug Q^3; R, a toothed rack rigidly attached to the carriage rear side frame M^3; R^2, a hanger hinged to and extended down from near each end of the carriage rear side frame M^3; R^3, another toothed rack beside and like the first toothed rack R, and hinged to the hangers R^2; R^4, a spring, which has one end attached to the first rack R and the other to the second rack R^3; S, a long rod extended from front to rear in bearings under the middle of the bottom plate A^3; S^2, a vertical bar hinged to the hind end of the long rod S and extended up abreast of the carriage M; S^3, a connecting-rod hinged both to the carriage M and upper end of the vertical bar S^2; T, a coiled-wire spring from end to end of the long rod S, which has one end attached to the fore end of the inclosed rod and the other to the lower end of the vertical bar S^2; T^2, a ratchet-wheel on the fore end of the long rod S; T^3, a holding-ratchet on the bottom plate A^3 and extended into the long rod ratchet-wheel T^2; U, a ratchet on the upper end of the vibratory frame G and adapted to work into the toothed racks R R^3; U^2, a pivot in the vibratory-frame ratchet U; V, a curved-spring paper-guide around the front part of each end of the platen N; and V^2, a bead or protuberance on the inner side of each spring-guide V, next to the platen N.

The movement of the carriage M from right to left is called the "forward" movement and from left to right the "backward" movement. In writing the forward movement is only a letter-space distance at a time; and it is called the "letter-space" movement. This movement is controlled and regulated by the right-angled vibratory frame G, the vibratory holding-ratchet U, and the toothed racks R R^3, and they are called, respectively, the "letter-space vibratory frame," the "letter-space ratchet," and the "letter-space racks."

The function of key-lever springs in such machines is to hold the levers in position or to restore them to position when depressed after the pressure is removed. For this purpose in the invention described the wire loop-spring C^5 astride the fore end of each key-lever C, and extended down in front of, under, and to the rear of the fulcrum A^5 to and on the bottom plate A^3, is efficient, light, and cheap, adapted to go between the guide-pins A^6, to be put on or taken off readily, to hold itself in place when on, to hold the lever in position, or to restore it thereto when depressed and released.

The function of space-key levers is to work the letter-space mechanism. It is desirable that they should work like the type-keys, that both should move in the same manner and direction. For this purpose in the invention described the space-key levers H are pivoted at the fore ends nearly or quite in line with the type-key-lever fulcrum A^5, and the space-keys H^3 and type-keys C^4 are in the same plane, and the actions of both are alike.

The function of the supplementary springs H^5 is to enable the carriage M to move forward when desired without obstruction. The depression of any type-key lever C will rock the letter-space vibratory frame G downward and forward and vibrate the ratchet U out of the rear rack R^3 into the front rack R, which will release the rear rack, which the rack-spring R^4 will then draw forward a type-space or letter-space distance till arrested by a stop on the front rack, and when released from pressure the key-lever will rise and allow the vibratory frame to rock again to place, upward and backward, and vibrate the ratchet back again out of the front rack into the rear rack, which will release the front rack, which the driving-power S T will then draw forward with the carriage M the same distance till arrested by a stop on the rear rack. In this way the carriage and substance to be written on may move forward, but only a letter-space distance at a time, for while the hinge U^2 will allow the ratchet U to turn in one direction that of the backward movement of the carriage and allow the carriage to move freely back to place from any point at any time, a stop for the purpose will not allow the ratchet to turn in the reverse direction, and thus the ratchet in the direction of the forward movement is a holding-ratchet, and as the depression of any type-key lever will vibrate it only from one rack to the other it will constantly hold the racks and carriage from moving forward, except a letter-space distance at a time, as described; but it is sometimes desirable that the carriage should move forward as freely as backward. Ordinarily the depression and release of the space-key levers H will vibrate the ratchet U only from one to the other of the letter-space racks R R^3, the same as the depression and release of any type-key lever C, for the supplementary springs H^5 are stiffer than the primary springs H^4 and act commonly as stops to prevent the farther depression of the levers; but an extra pressure on either space-key H^3 will, through pin H^7, depress the contiguous supplementary spring H^5, which will depress the vibratory-frame cross-bar G^2 an extra distance, which will vibrate the ratchet U forward entirely out from both racks R^3 R, which will release both racks and carriage, which will allow the carriage to move as freely forward as backward.

The new devices herein shown and described, but not claimed, are the subjects of

separate applications for patents; but the devices which are the subject of this application and

What I claim are as follows:

1. In a type-writing machine, the combination of a wire loop-spring with and astride the fore end of each type-key lever, which has the fulcrum at the fore end, the type-bar connecting-rod at the hind end, and the type-key between the two ends and extended down in front and under and to the rear of the fulcrum.

2. In a type-writing machine, the combination of a supplementary spring with the space-key lever and letter-space vibratory frame.

GEORGE W. N. YOST.

Witnesses:
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