

No. 840,768.

PATENTED JAN. 8, 1907.

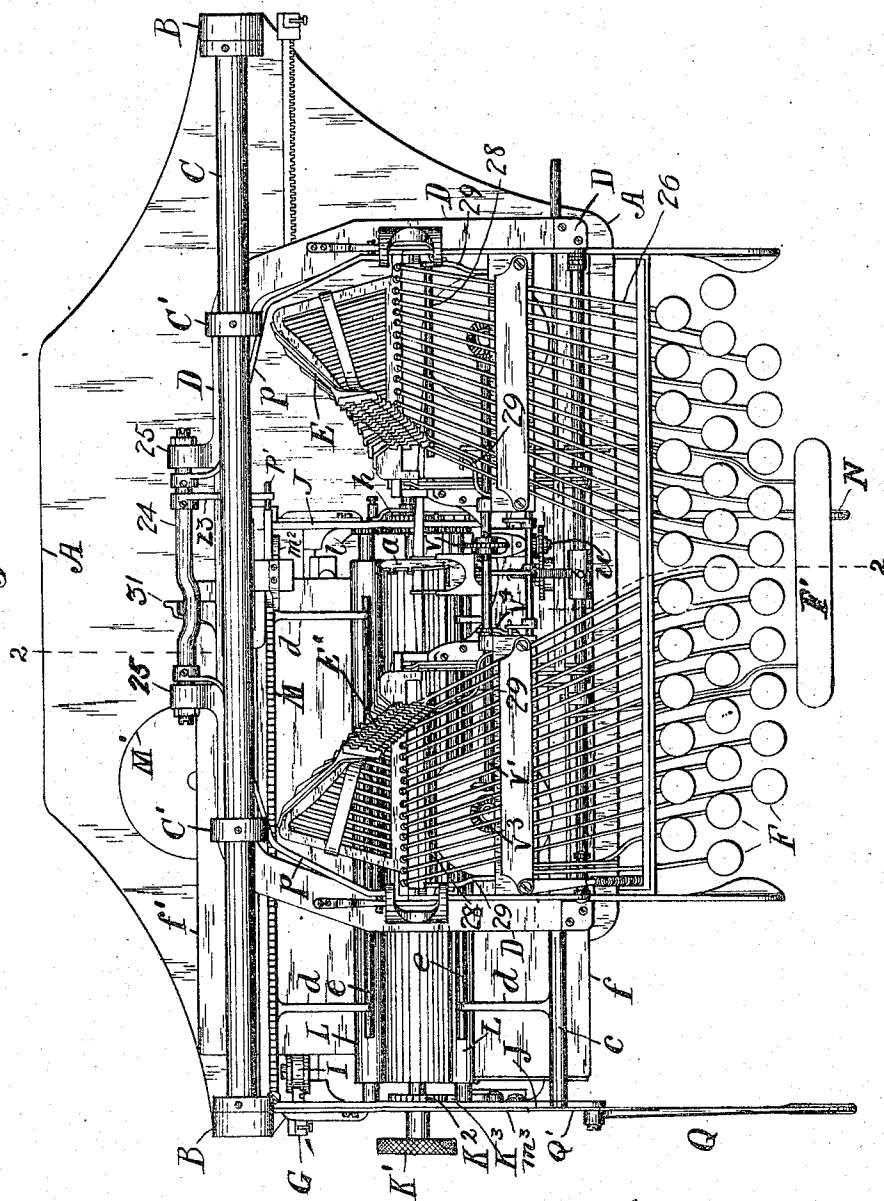
J. J. HANNAHS & A. A. HIEBER.

TYPE WRITER.

APPLICATION FILED AUG. 18, 1902.

8 SHEETS—SHEET 1.

Fig. 1.



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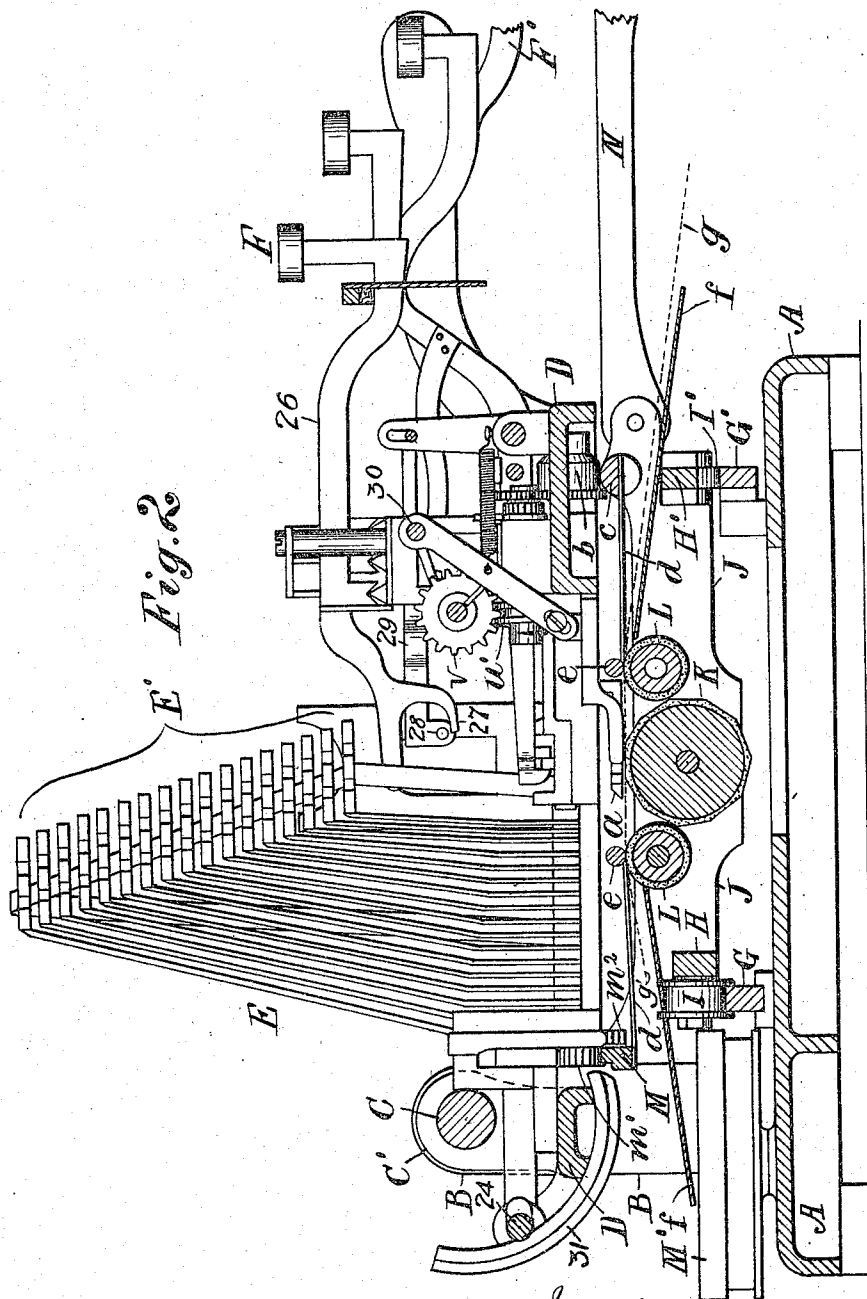
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8 SHEETS—SHEET 2.



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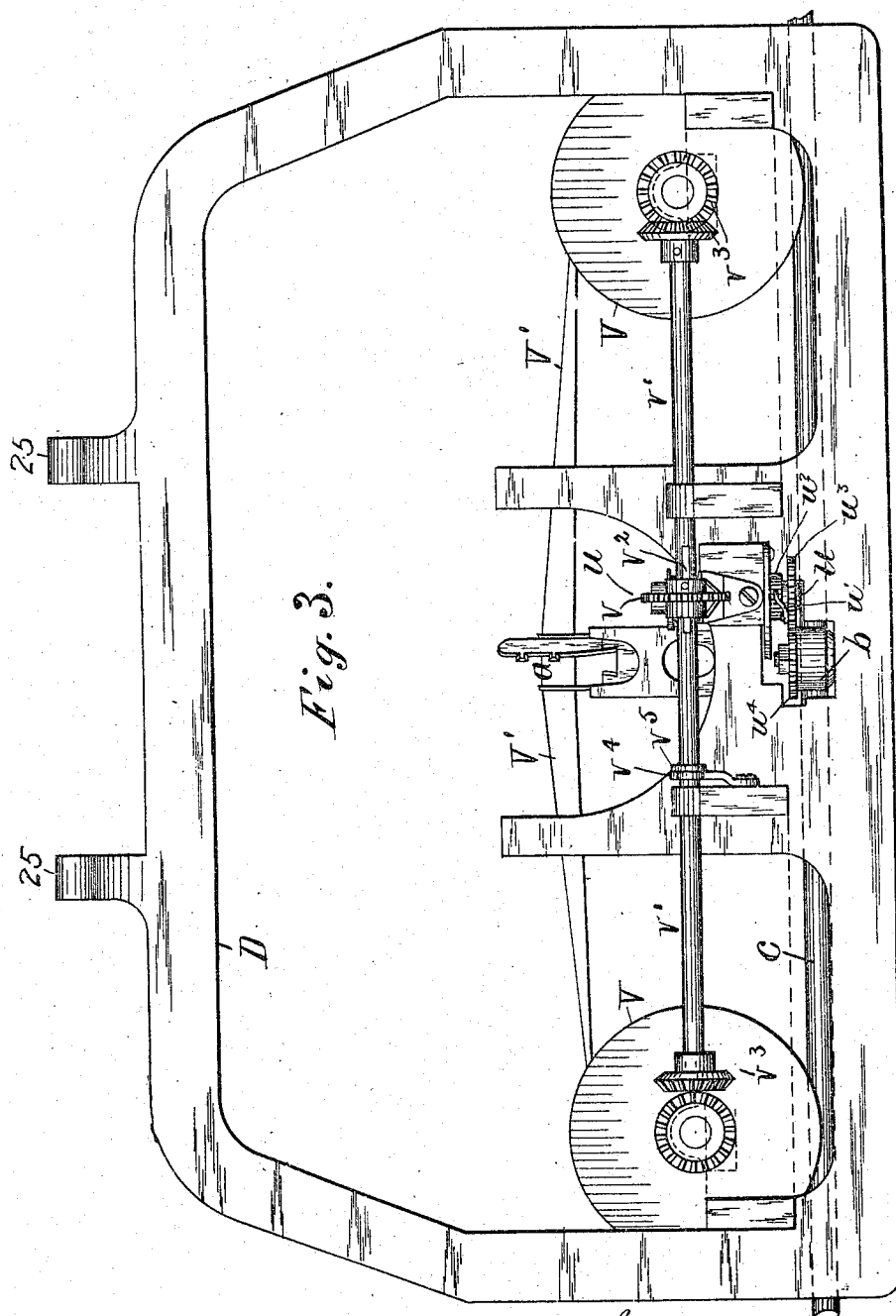
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8 SHEETS—SHEET 3.



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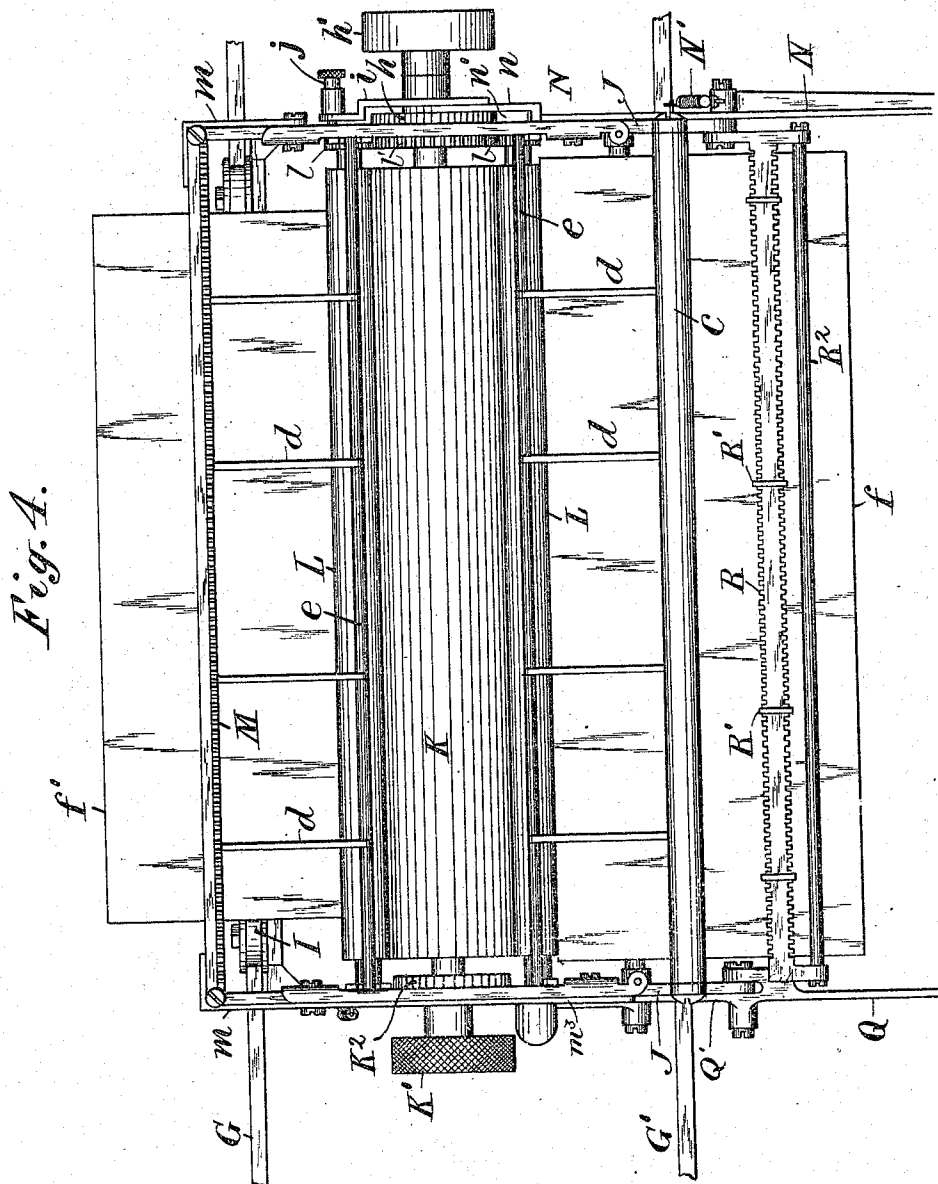
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8 SHEETS—SHEET 4.



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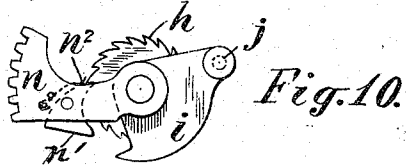
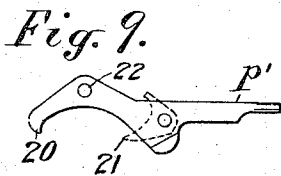
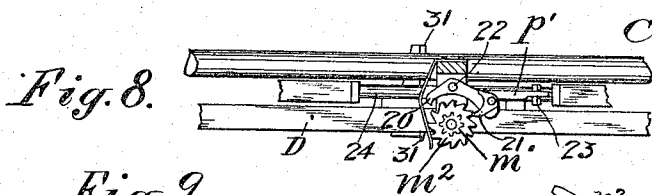
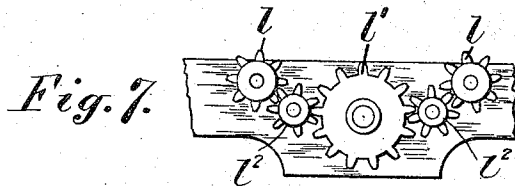
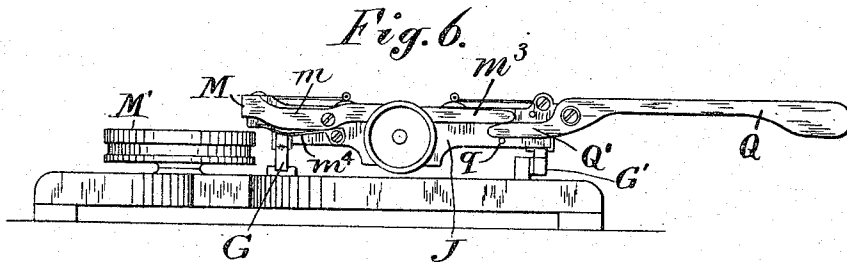
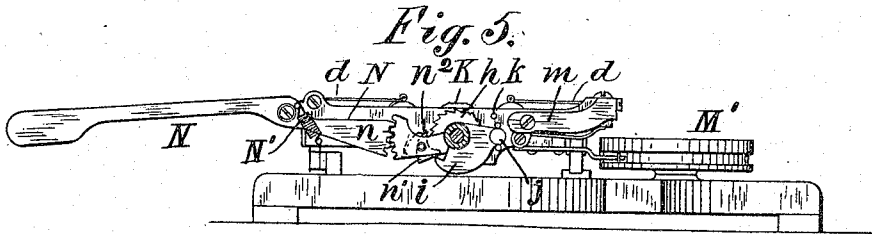
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8 SHEETS—SHEET 5.



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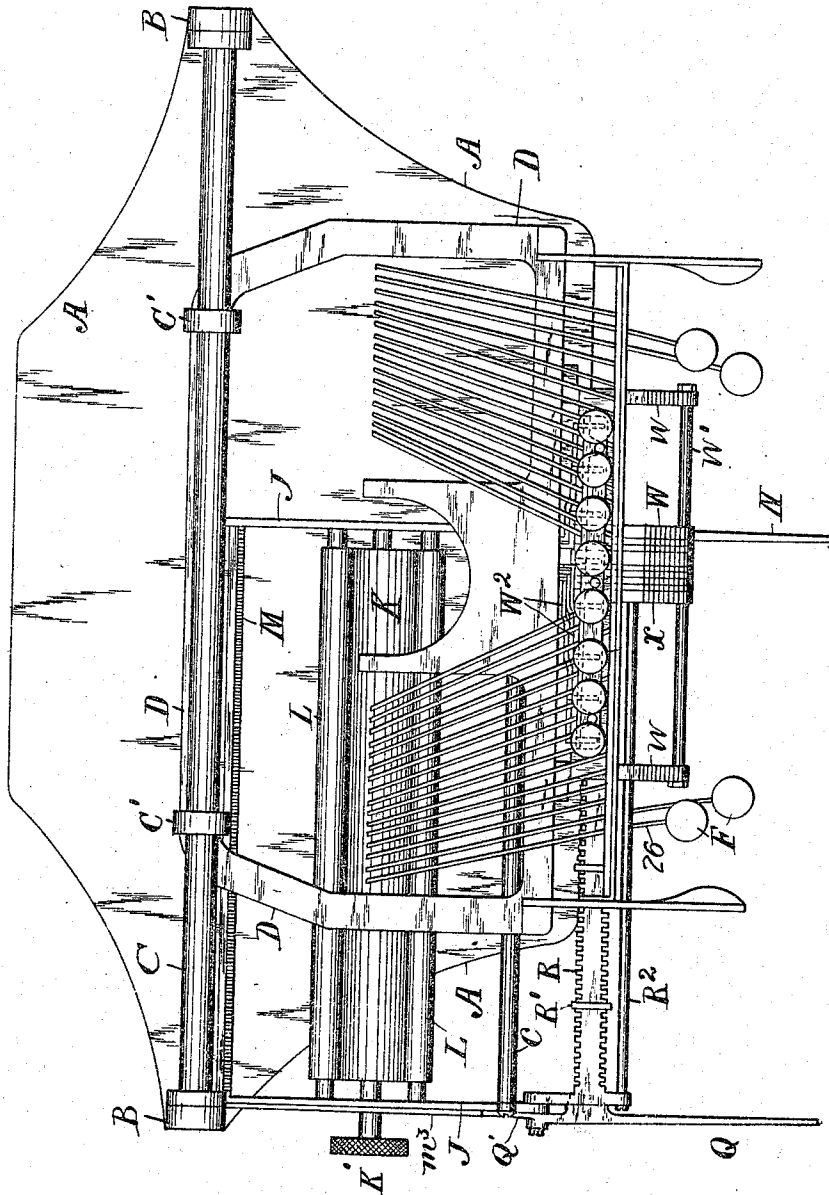
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8 SHEETS—SHEET 6.

Fig. 11.



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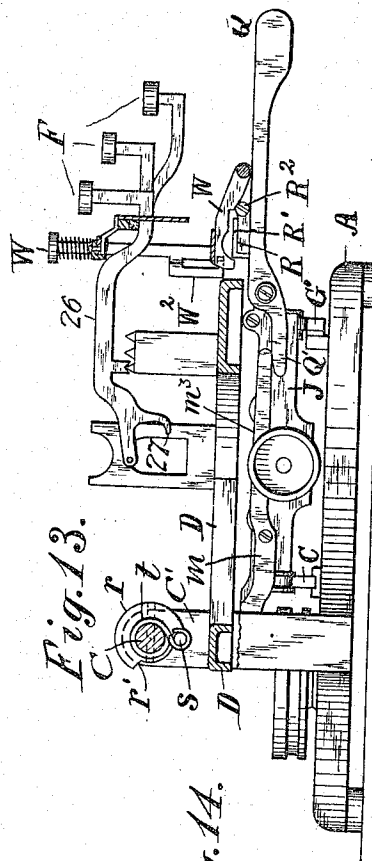
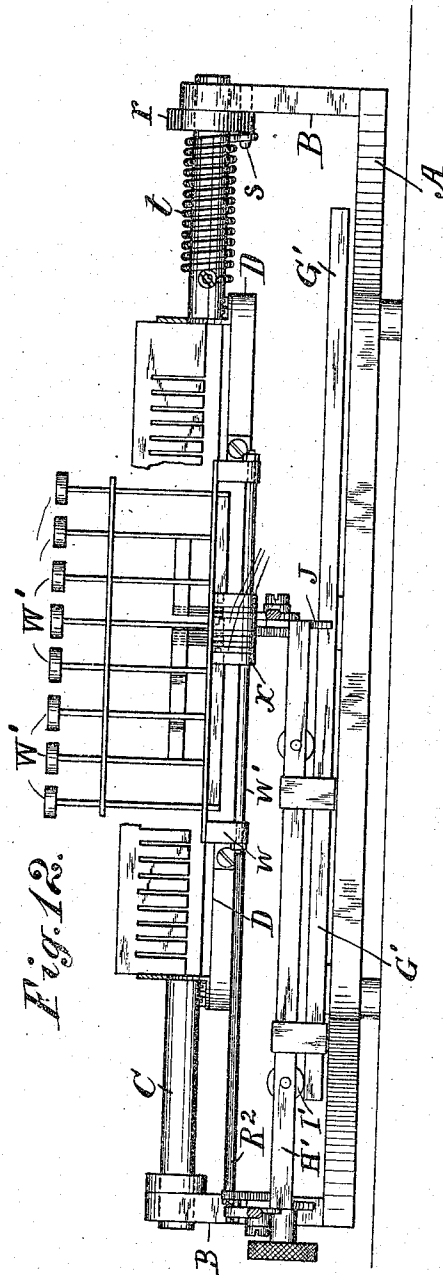
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APPLICATION FILED AUG. 18, 1902.

8 SHEETS—SHEET 7.



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PATENTED JAN. 8, 1907.

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TYPE WRITER.

APPLICATION FILED AUG. 18, 1902.

8 SHEETS—SHEET 8.

Fig. 15.

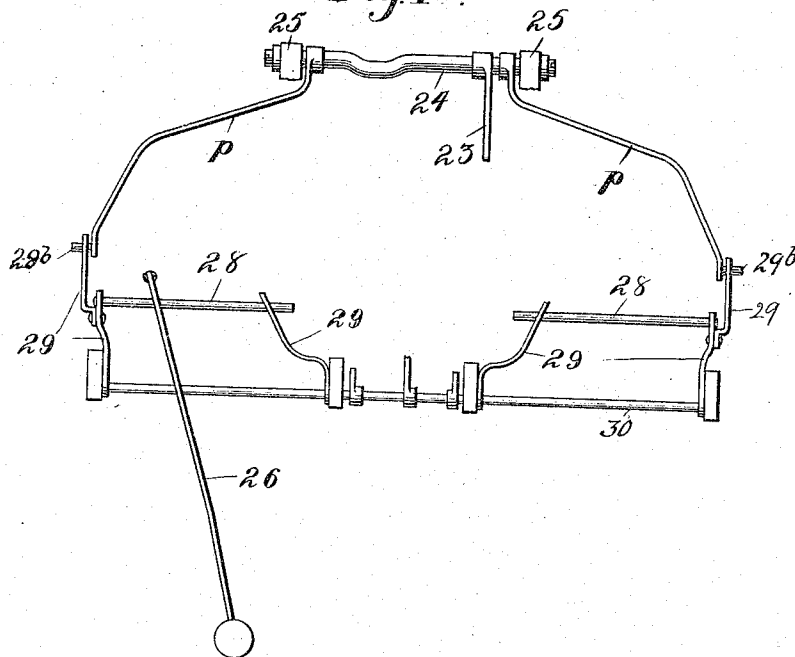
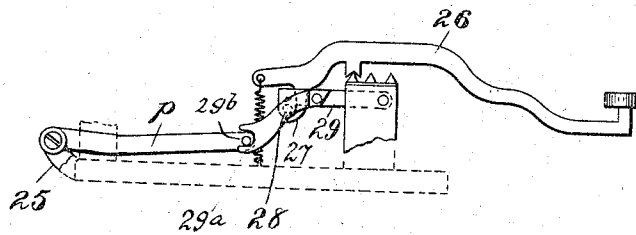


Fig. 16.



Witnesses
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By their Attorneys
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UNITED STATES PATENT OFFICE.

JOHN JAY HANNAHS, OF NEW YORK, AND ANTHONY A. HIEBER, OF
BROOKLYN, NEW YORK, ASSIGNORS, BY DIRECT AND MESNE
ASSIGNMENTS, TO UNIVERSAL TYPEWRITER COMPANY, A COR-
PORATION OF NEW YORK.

TYPE-WRITER.

No. 840,768.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed August 18, 1902. Serial No. 120,156.

To all whom it may concern:

Be it known that we, JOHN J. HANNAHS, whose residence is 210 West Fourth street, New York, county of New York, and ANTHONY A. HIEBER, whose residence and post-office address is 1243 Putnam avenue, Brooklyn, county of Kings, State of New York, citizens of the United States, have invented certain new and useful Improvements in
10 Type-Writers, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to that class
15 of type-writing machines in which an open base-frame is supported upon or over the paper to be inscribed and the type when actuated by the keys strike downward through the frame upon the paper. A type mechanism of this class is shown in our application,
20 Serial No. 45,810, filed February 4, 1901, in connection with a flat platen, such as is used for writing upon leaves of books or large sheets of paper.

The chief object of the present invention
25 is to adapt the same type mechanism for use with a movable carriage carrying line-feed rollers. In such new construction the type mechanism is held stationary and the carriage travels longitudinally beneath the same
30 to effect letter-spacing, while the feeding devices upon the carriage serve to shift the paper for line-spacing.

In the present invention the bed of the machine is provided with a hinge-bar to which
35 the type mechanism is attached to be turned upward, if desired; also, with track-rails to support the paper-carriage below the type mechanism, and the carriage has upon the
40 top a track-rail which supports the front side of the type mechanism by means of a roll resting thereon.

The present improvements include the construction of the bed with track-rails in
45 the lower part and a paper-carriage movable thereon and a support for the type mechanism above such carriage, means to balance the type mechanism when turned upwardly upon the hinge-bar, and means for locking the
50 paper-carriage when the type mechanism is raised

in the present invention any suitable bed

may be used to support the type mechanism above the paper-carriage, and any species of rails or guides may be used to support such carriage for longitudinal movement.

In the drawings a machine is represented with a substantially flat bed provided with track-rails to support the paper-carriage by means of rolls upon the carriage, and the
60 type mechanism is sustained above the carriage by the connection of its base-frame with a hinge-bar at the rear side of the bed and by a roller upon the base-frame resting upon a rail provided for the purpose on the
65 carriage.

The construction shown in the drawings will first be described, and any desirable modifications will then be pointed out.

Figure 1 is a plan of the machine without
70 tabulator. Fig. 2 is a cross-section on line 2 2 in Fig. 1. Fig. 3 shows the base-frame with the ribbon-feed attachments alone. Fig. 4 is a plan of the paper-carriage detached from the bed and type mechanism.
75 Fig. 5 shows the right-hand end of the paper-carriage and its connection with the bed. Fig. 6 shows the left-hand end of the paper-carriage and the same connection. Fig. 7 shows the gearing within the right-hand end
80 of the paper-carriage. Fig. 8 is an elevation viewed from within the center of the base-frame of the connections from the spacing-lever to the feed-escapement. Fig. 9 is an elevation of the escapement-lever with the
85 pawl shown in dotted lines. Fig. 10 is an elevation, drawn twice the size of Fig. 5, of the line-feed pawl and adjustable stop. Fig. 11 is a plan of the tabulating appliances. Fig. 12 is an elevation of the same; Fig. 13,
90 an end elevation of the bed and carriage with cross-section of the base-frame, showing the tabulating appliances; and Fig. 14 shows one of the supports for the tabulating-stops. Fig. 15 is a plan, and Fig. 16 a side elevation,
95 showing the manner in which the universal bar or bars which are operated by the key-levers are connected to the devices which control the letter feeding or spacing movements of the carriage.

A designates the bed of the entire machine, having at its rear corners bearings B, projected upwardly to carry the hinge-bar C.

D designates the base-frame of the type

mechanism, having type-bars E with heads E, carrying multiple type-faces arranged in rows radiating from opposite sides of the printing-point, as described in our application Serial No. 45,810. The finger-keys F are adapted to throw the type-bars downward and print the impressions upon paper beneath the base-frame D in the center of the type-guide *a* in Fig. 1. Upon the bed A track-rails G G' are fixed, and the paper-carriage has side bars H H', provided, respectively, with flanged and plain wheels I I' to run upon such track-rails.

The carriage has end bars J, supporting at their front ends a rail *c* to support a roll *b*, pivoted upon the front of the base-frame D. The rear edge of the base-frame has lugs C' secured upon the hinge-bar C, and such lugs and the roll *b* support the type mechanism in its operative position above the paper-carriage, which is free to move longitudinally upon the track-rails G G'. A revoluble polygonal platen K is journaled in the carriage along the middle line thereof and is provided at one end with a knob K', whereby it may be rotated. The usual notched wheel K² is fixed to the platen, and a detent K³ of any usual construction coöperates with said wheel to prevent accidental revolution of the platen. Feeding-rolls L are journaled upon the carriage-bars J at opposite edges of such platen, and a rack-bar M to feed the carriage for letter-spacing is carried upon the rear edge of the carriage by pivoted arms *m*. (See Figs. 4, 5, and 6.) Leaf-springs *d* are extended from the rack-bar M and the rail *c* toward the tops of the feeding-rolls, and pressure-rolls *e* are journaled upon the ends of such springs, so as to turn when the feeding-rolls are rotated. Flat plates *f* and *f'* are fixed in the carriage at the outer sides of the rolls L, one of them to guide the paper *g* into the feeding-rolls and the other to lead the paper therefrom, as indicated by the dotted line *g'* in Fig. 2. At the right-hand end of the paper-carriage, the inside of which is shown in Fig. 7, the feeding-rolls are connected by gears *l*² with a central gear *l'*, having attached to its hub (on the outer side of the carriage-bar J) a ratchet-wheel *h*, and a line-feed lever N is pivoted upon the same end of the carriage and connected with an arm *n*, carrying a pawl *n'* to engage the ratchet-wheel *h*. A spring N' presses the arm and the pawl normally downward as far as permitted by an adjustable stop *i*, which is journaled upon the axle of the ratchet-wheel *h* and may be set in different positions around said wheel by a spring-stud *j*, fitted to any one of a series of holes *k* in the frame-bar J. A spring *n*² is provided to press the pawl *n'* normally into the wheel *h*; but the lower end of the pawl is formed with a shoulder which when it contacts with the stop *i* (see Figs. 5 and 10) throws it out of the teeth

upon said wheel, so that the feeding-rolls may be rotated manually by a knob *h'*. (Shown in Fig. 4.)

The rack-bar M of the letter-feeding or escapement mechanism meshes with the under side of a pinion *m'*, Figs. 2 and 8, said pinion being journaled upon the liftable frame D, which carries the type system, and being connected to an escapement-wheel *m*², concentric with said pinion, as seen at Fig. 8. Escapement-pawls 20 21 control the escapement of wheel *m*², and hence the letter-feeding movements of the carriage, said pawls being upon a lever or arm *p'*, which is pivoted at 22 upon a part of said frame D. The lever *p'* and the pawls are vibrated by the type-keys. For this purpose there is employed an actuating-arm 23, extending forwardly from a rock-shaft 24, journaled in ears 25, projecting rearwardly from said frame D. By rocking the shaft the arm 25 vibrates and by means of its forked connection with pawl-lever *p'* gives the necessary oscillation to the latter, so that the paper-carriage is fed step by step under the influence of the spring-drum M'. Also fixed upon the rock-shaft 24 are two forwardly-extending arms *p*, whereby said shaft is rocked. Each of the type-operating levers 26, bearing the keys F, is provided with a lug 27 to catch under a universal bar 28, one at each side of the machine, Figs. 1 and 2, to lift the universal bar or bars during the movements of the type-bars to the platen. Said universal bars are mounted upon arms 29, the latter fixed upon and projecting rearwardly from a rock-shaft 30. By means of this universal-bar frame the arms *p* are rocked, the escapement-pawls 20 21 operated, and the paper-carriage fed at the successive operations of the type-keys F. The outer arms 29 are forked at their rear ends at 29^a, Fig. 16, to engage pins 29^b, fixed in the forward ends of arms *p*, whereby movement of arms 29 is communicated to the latter.

It will be understood that when the type-bar-carrying frame D is swung up and back about the hinge or axis C the escapement-pinion *m'*, which is mounted upon said frame D, necessarily swings up out of engagement with the escapement-rack M, and hence loses control of the same and of the paper-carriage, so that the latter would be driven to the left by the spring-drum M'; but this difficulty is avoided by the use of a detent 31, fixed upon said frame D immediately behind rack M and normally out of engagement therewith, Fig. 2, but moving into engagement with said rack as said frame D swings upward, so as to keep control of the rack while pinion *m'* is rising, and thereby hold the carriage stationary, said detent curving about the axis C or having the form of a segment, so as to maintain engagement with said rack during the swinging up and

down of frame D. When said frame D is up, the rack M may still be released by means of the lever Q, which moves the rack down out of engagement with the detent 21, so that when desired the carriage may be moved freely to left or right whether the frame D is up or down. The type-guide *a*, which is necessarily adjacent to the printing-point upon the platen, serves as a convenient index to guide the operator in positioning the carriage.

One of the arms *m*, which supports the rack-bar M, has a lever *m*³ and is extended (see Figs. 6 and 11) past its fulcrum (upon the carriage end J) nearly to the opposite side of the carriage, and a release lever or key Q is pivoted upon the same end of the carriage and has an arm Q' extended beneath the end of the lever *m*³ and supported when at rest upon the pin *q*. A spring *m*⁴ presses the arm *m* upward to hold the rack-bar M normally in engagement with the pinion *m*¹, and the carriage is released from the pinion *m*¹ by pressure upon the release-lever Q, which presses the lever *m*³ upward and lowers the rack from the pinion.

Counterbalancing of type mechanism.—Figs. 12 and 13 show a collar *r* upon the hinge-bar C adjacent to the bearing B, in which one end of the hinge-bar is journaled, such collar having a segmental notch whose opposite ends *r*¹ form stops to engage a pin *s* upon the bearing. A spiral spring *t* is wound upon the hinge-bar and has one end attached to such pin and the other end to the hinge-bar, the torsion of the spring being adjusted to counterbalance the greater part of the weight of the type mechanism. One of the stops *r*¹ serves to hold the type mechanism when turned up into equilibrium above the hinge-bar to correct the writing upon the paper beneath. A sufficient proportion of the weight is left unbalanced by the spring *t* to drive the roll *b* by friction with the rail *c* when the carriage is fed by the rack-bar M.

Ribbon-feed.—Figs. 1, 2, and 3 show a shaft *u* geared to the roll *b* and carrying a worm *u*¹, fitted to a worm-wheel *v* upon the spool-shaft *v*¹. The shaft is fitted movably to the worm-wheel and has a slot *v*² to fit a pin or key in the worm-wheel, and the shaft may thus be shifted endwise to engage the gears *v*³ with either spool V at pleasure. The worm-wheel is held from end motion by suitable stops, and the spool-shaft is locked in either of the required longitudinal adjustments by a latch *v*⁴, fitted at pleasure to either side of a collar *v*⁵ upon the spool-shaft. The ribbon is thus fed automatically (by the rotation of the roll *b*) at each longitudinal movement of the carriage, and the operator shifts the spool-shaft whenever required to reverse the movement of the ribbon V'. A pawl *u*¹, Fig. 3, connected to gear *u*³ on shaft *u*, engages ratchet-wheel *u*², fixed on the lat-

ter shaft, so that gear *u*³ may turn idly as the paper-carriage runs back. Gear *u*³ meshes with gear *u*⁴, fixed to roll *b*.

Having thus set forth the nature of the invention, what is claimed herein is—

1. In a type-writing machine, the combination of a base, a carriage movable over said base, a platen upon said carriage, a frame overlying said carriage and hinged in rear upon said base, type-bars and keys mounted upon said hinged frame over said carriage, carriage-escapement mechanism controlled by said keys, means whereby said carriage is detained from movement when said frame is in tilted-up position, a release-key mounted upon said carriage, and means for enabling said release-key to release the carriage when said hinged frame is in its tilted-up position.

2. In a type-writing machine, the combination of a base, a carriage movable over said base, a platen upon said carriage, a frame overlying said carriage and hinged in rear upon said base, type-bars and keys mounted upon said hinged frame over said carriage, carriage-escapement mechanism controlled by said keys, means whereby said carriage is detained from movement when said frame is in tilted-up position, a release-key mounted upon said carriage, and means for enabling said release-key to release the carriage when said hinged frame is either down in working position or tilted up about its hinge.

3. In a type-writing machine, the combination of a base, a carriage movable over said base, a platen upon said carriage, a frame overlying said carriage and hinged in rear upon said base, means for locking the carriage against movement when the frame is tilted upward, type-bars and keys mounted upon said hinged frame over said carriage, a rack mounted upon said carriage for a releasing movement, a key upon said carriage for moving said rack to carriage-releasing position, said key being operable for both the normal and tilted relation of the carriage and key-controlled escapement devices to cooperate with said rack.

4. In a type-writing machine, the combination of a base, a carriage movable over said base, a platen upon said carriage, a frame overlying said carriage and hinged in rear upon said base, type-bars and keys mounted upon said hinged frame over said carriage, escapement devices mounted upon said hinged frame and controlled by said keys, a rack to cooperate with said escapement devices and mounted upon said carriage for a releasing movement, a key upon said carriage for moving said rack to carriage-releasing position, said escapement devices being movable out of engagement with said rack when said hinged frame is tilted up; and a detent upon said hinged frame and

normally disengaged from said rack but moving into engagement therewith when said hinged frame is tilted up; said rack being releasable from both said detent and said escapement devices.

5 5. In a type-writing machine, the combination of a base, a letter-feeding carriage movable over said base and having a platen, a stationary frame overlying said carriage
10 and hinged in rear upon said base, two rows of type-bars upon said hinged frame and radiating from opposite sides of the printing-point, keys connected to said type-bars, means upon said hinged frame for indicating
15 the printing-point, carriage-escapement devices controlled by said keys, a release-key upon said carriage, and means for enabling said release-key to release the carriage when said hinged frame is either down in working
20 position or tilted up about its hinge.

6. In a type-writing machine, the combination of a base, a letter-feeding carriage supported upon said base and movable thereover, a stationary frame hinged in rear upon
25 said base and having a ribbon-feed and a rotatable support at its forward portion bearing upon said carriage arranged to operate the ribbon-feed, a system of type-bars mounted upon said frame, keys connected to
30 the type-bars, and letter-feeding mechanism connected to the keys.

7. In a type-writing machine, the combination of a base, a letter-feeding carriage supported upon said base and movable thereover, a stationary frame hinged in rear upon
35 said base and having a ribbon-feed and a rotatable support at its front side bearing upon said carriage arranged to operate the ribbon-feed, a spring opposing the weight of said
40 frame, a system of type-bars mounted upon said frame, keys connected to the type-bars, and letter-feeding mechanism connected to the keys.

8. In a type-writing machine, the combination of a base, a carriage-track thereon, a letter-feeding carriage movable upon said
45 track, a rail upon the upper side of said carriage, a stationary frame hinged in rear upon said base and having a ribbon-feed and a roll
50 to rest upon said rail and arranged to operate the ribbon-feed, a system of type-bars mounted upon said frame, keys for the type-bars, and letter-feeding mechanism controlled by the keys.

55 9. In a type-writing machine, the combination of a base, front and rear carriage-tracks thereon, a letter-feeding carriage having rolls running upon said tracks, including

a pair of rolls running upon said front track, a rail upon said carriage directly over said
60 front rolls, a stationary frame hinged in rear upon said base and having a ribbon-feed and a front roll to rest upon said rail and arranged to operate the ribbon-feed, type-bars and keys mounted upon said frame, and letter-
65 feeding mechanism.

10. In a type-writing machine, the combination of a base, a carriage movable over said base, a feed-rack upon said carriage, a
70 frame hinged in rear upon said base, type-bars and keys upon said hinged frame, letter-feeding mechanism controlled by the keys and mounted upon said hinged frame and having a part to engage said rack but moving
75 out of engagement therewith when said hinged frame is swung up, and a segmental detent curved concentrically with the hinge of said frame and normally out of engagement
80 with said rack but moved into engagement therewith by the upward movement of said hinged frame for detaining the rack and carriage.

11. In a type-writing machine, the combination of a base, a carriage movable over said base, a rack upon said carriage, a frame
85 hinged in rear upon said base, type-bars and keys upon said hinged frame, a pinion and escapement-wheel mounted upon said hinged frame, said pinion normally engaging said rack but moving out of engagement there-
90 with when said hinged frame is swung up, type-bars and keys mounted upon said hinged frame, a key-controlled escapement device to cooperate with said escapement-wheel, and a detent upon said hinged frame
95 for engaging the rack when said pinion is swung out of engagement therewith.

12. In a type-writer, a bed having a paper-carriage movable thereon, bearings projected upwardly from the bed, a hinge-bar affixed
100 therein, a frame attached to such hinge-bar and having a ribbon-feed and a type mechanism mounted on said frame, a supporting-rod upon the paper-carrier, and a rotatable supporting device upon the frame to support the
105 type mechanism over the platen arranged to operate the ribbon-feed.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JOHN JAY HANNAHS.
ANTHONY A. HIEBER.

Witnesses:

L. LEE,
A. F. HEATON.