

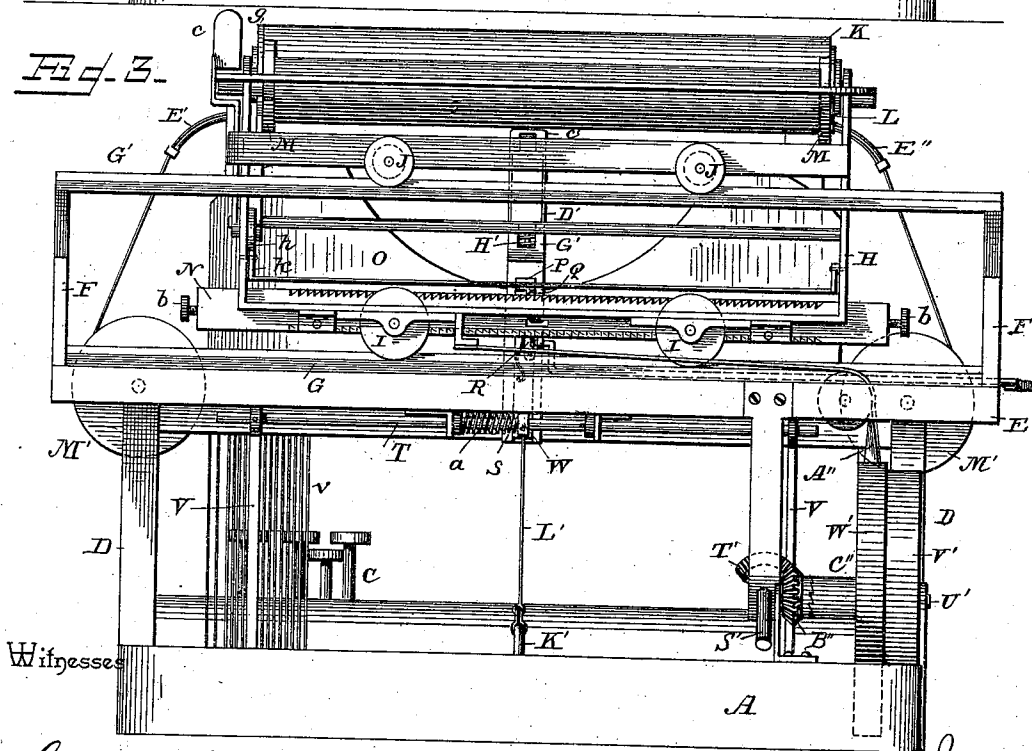
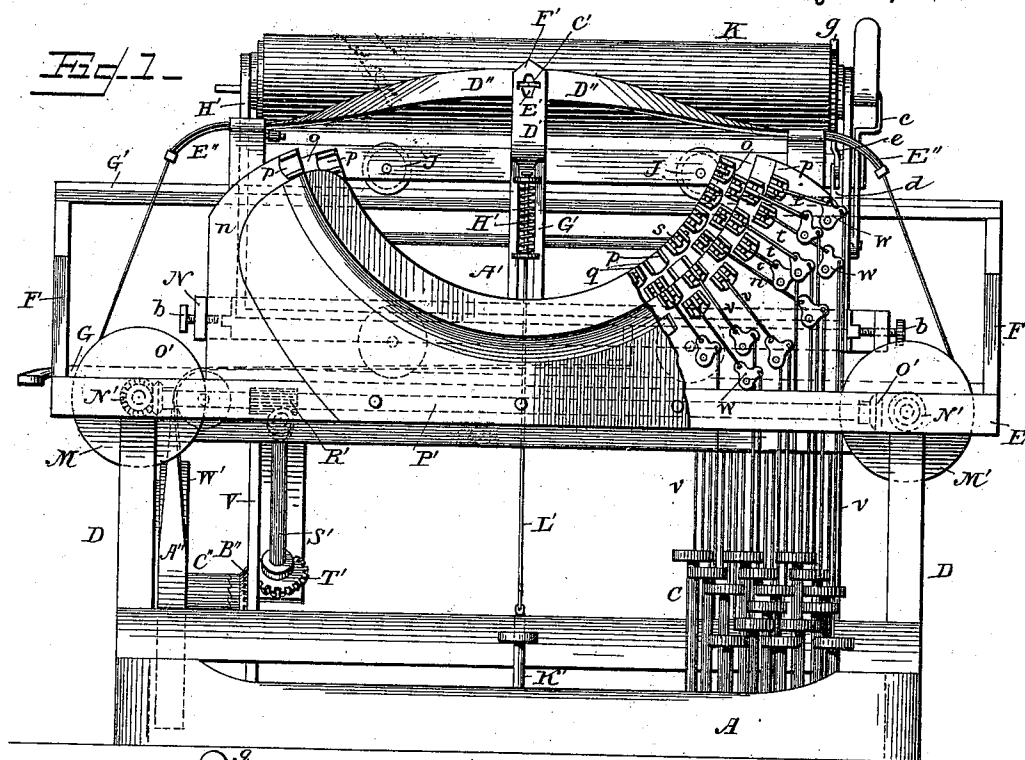
(No Model.)

4 Sheets—Sheet 1.

J. A. GARNER.
TYPE WRITING MACHINE.

No. 502,072.

Patented July 25, 1893.



Witnesses

Chas. H. Curran
J. D. Dwyer

John A. Garner
by
C. A. Snow & Co.
attys.

(No Model.)

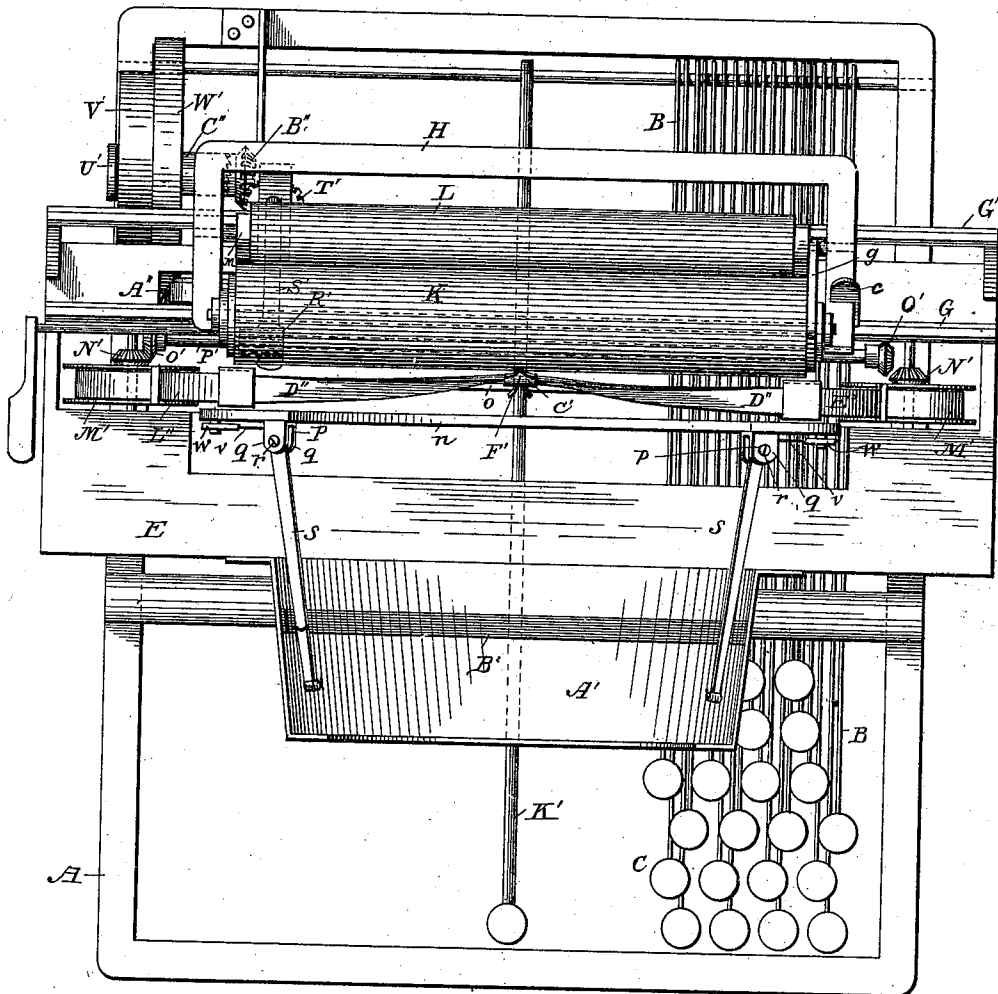
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Fig. 2.



Witnesses

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[Signature]

Inventor

John A. Garner

By his Attorneys,

Chas H. Curand

(No Model.)

4 Sheets—Sheet 3.

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Fig. 4.

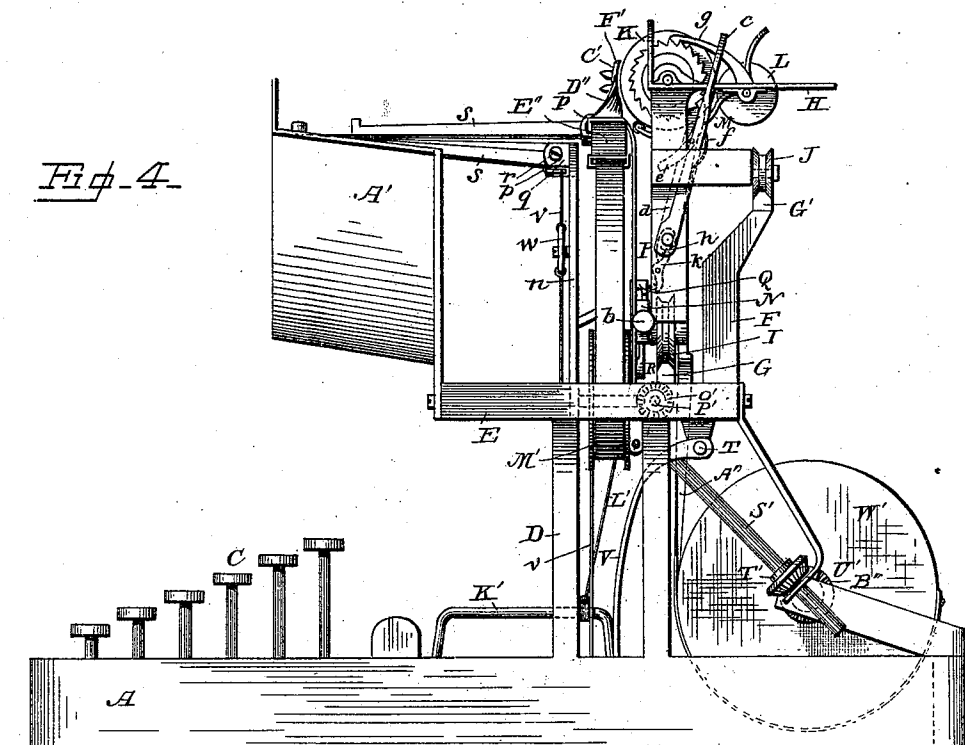
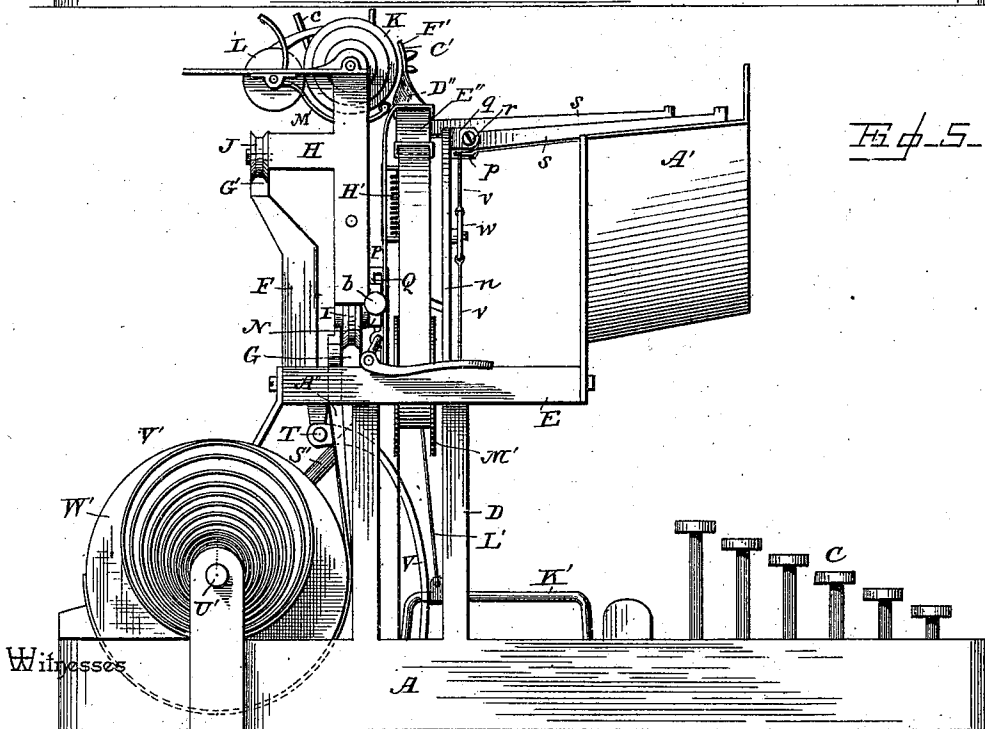


Fig. 5.



Witnesses

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By his Attorneys, John A. Garner
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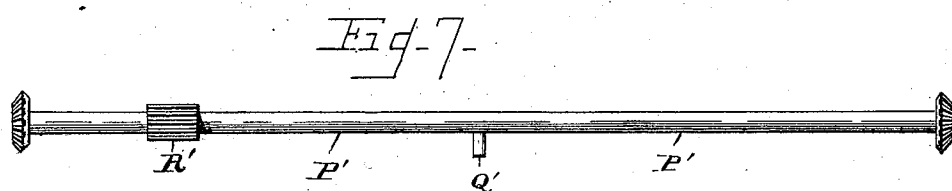
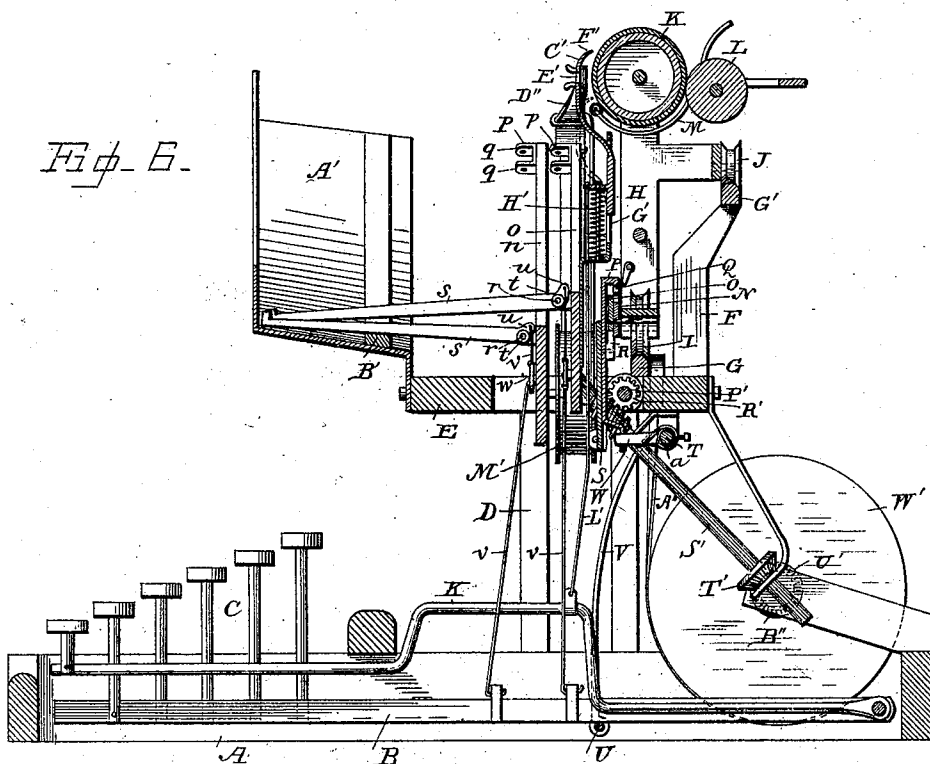
(No Model.)

4 Sheets—Sheet 4.

J. A. GARNER.
TYPE WRITING MACHINE.

No. 502,072.

Patented July 25, 1893.



Witnesses

Inventor

Chas. H. Curand
[Signature]

John A. Garner
By his Attorneys,

Chas. H. Curand

UNITED STATES PATENT OFFICE.

JOHN A. GARNER, OF KANSAS CITY, MISSOURI.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 502,072, dated July 25, 1893.

Application filed September 21, 1892. Serial No. 446,431. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. GARNER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Type-Writing Machine, of which the following is a specification.

My invention relates to improvements in type-writing machines, the objects of my improvements being to provide means whereby the line which is being written, or printed, may be viewed at all times by the operator without the necessity of raising the impact roller or moving any other part of the machine out of its normal position; furthermore, to provide means whereby all of the type-bars are in plain view and easily accessible, to facilitate cleaning and adjustment; furthermore, to provide improved means for guiding the paper around the impact roller; furthermore, to provide improved means for mounting and guiding the carriage, whereby oscillations thereof which produce imperfect alignment of letters is avoided; furthermore, to provide improved line-spacing mechanism, connected with the feed-mechanism, whereby when the former is operated the carriage is temporarily released from the latter; furthermore, to provide improved means for operating the ribbon-rolls by power derived from the carriage operating spring, whereby the keys are relieved from this portion of the work; and furthermore, to provide means whereby the type-guide and ribbon-guide may be withdrawn from in front of the impact roller so as to bring all of the printed lines into view.

Further objects of my invention will appear hereinafter in the description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings: Figure 1 is a front view of a type-writing machine, embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a rear view. Fig. 4 is a side view, showing the line-spacing mechanism. Fig. 5 is a view of the opposite side. Fig. 6 is a central sectional view. Fig. 7 is a detail view of the means for reversing the ribbon feed.

A designates the frame of the machine, B the key-bars, C the keys, which may be arranged in any preferred manner, D D side

standards located near the rear end of the frame, and E a platform supported by said standards.

The guide frame for the carriage comprises uprights, F F, secured to the said platform and having opposite ends of the guide-rails, G G', secured thereto, the guide-rail G being located in the lower ends of the uprights, close to the plane of the platform, and the guide-rail G' being located above and in rear of the latter.

The carriage, H, is provided at its bottom with grooved rollers, I I, to travel upon the lower guide-rail, and at its top, on the rear side, with similar guide-rollers, J J, to travel upon the upper guide-rail.

The impact-roller, K, is mounted in bearings at opposite ends of the carriage, a guide-roller, L, is mounted in the frame in rear, and slightly below, the impact roller, with its surface in contact with that of the latter, a curved guide-plate, M, extends above and below the guide-roller and is arranged concentric with the impact roller, and a small pressure roll is mounted upon the front edge of the guide-plate to hold the front edge of the paper in contact with the impact roller.

The carriage is provided with feed-mechanism comprising the stationary rack-bar, N, and the longitudinally movable rack-bar, O, arranged in juxta-position to the bar, N; the teeth of the bar N being turned upward and the teeth of the other downward.

P represents a slide carrying, at its upper end a rigid pawl, Q to engage the teeth of the stationary rack-bar, and also carrying a pivoted pawl, R, to engage the teeth of the sliding rack-bar, said slide being mounted in a slotted guide, S, which is pivoted at its lower end to the platform.

A rock-shaft, T, is mounted upon the under side of the platform, and is provided with a depending universal bar, U, which extends transversely under the key-bars, so as to be depressed by the latter as they are struck, and connected to said rock-shaft by hanger-arms, V V, whereby when the pressure bar is depressed the rock-shaft is rocked, thus causing an arm, W, which is carried by an intermediate part of the rock-shaft, and is attached at its free end to the slide, P, to depress and

operate the latter. A coiled spring, *a*, on the rock-shaft, holds the pressure-bar and slide, normally, in their raised positions.

In the ends of the stationary rack-bar are fitted the thumb-screws, *b b*, which engage opposite ends of the sliding, rack-bar, and limit the movement of the latter. By means of the two adjusting screws the sliding bar may be adjusted at both ends, and a far more accurate adjustment attained.

On one end of the carriage is arranged the line-spacing mechanism, comprising, essentially, a lever, *c*, pivoted at its lower end to the side of the carriage-frame and carrying a pawl-arm, *d*, to the free end of which is pivoted the pawl, *e*, which engages a ratchet on the end of the impact-roller. A spring, *f*, throws the pawl back after each movement of the lever. A stationary retaining pawl, *g*, pivoted to the carriage engages the said ratchet and holds the impact roller in its adjusted position.

To the lower end of the line-spacing lever, *c*, is attached a finger, *h*, which engages one end of an angle-lever, *k*, the opposite end of which engages the transverse trip-rod *l* which engages the pawl *Q* of the stationary rack bar, whereby as the line-spacing lever is operated to move the impact roller the distance necessary for the next line, the trip rod is operated, and being in a position to engage the pawl, the latter is swung forward sufficiently to free the rack bars and allow the carriage to be moved freely.

The vertical type-bar supporting-plates, *n* and *o*, are arranged in front of the carriage, the rear plate, *o*, extending up above the front plate, *n*, and both plates having concaved upper edges, and to these plates are secured the type-bar hangers, *p p p*, consisting of parallel ears, *q q*, between which are pivoted, on transverse pins, *r r*, the type-bars *s s*, the latter being provided with bored bearing-sleeves, *t t*, which bear at opposite ends against the inner surfaces of the parallel ears. Thus, the type-bars are provided with long bearings, which prevent lateral deflection of the bars and avoid the rapid wearing of the bearings. The type-bars extend slightly beyond their bearings to form extensions, *u u*, which are connected by means of rods or wires, *v v*, with the key-bars, respectively, small bell-crank levers, *w w*, being inserted at intermediate points of said rods or wires to change the direction of draft to suit the particular type-bars and key-bars which are connected. It will be seen that the type-bars are pivoted to the supporting plates near their concaved upper edges, and therefore are arranged in two approximately semi-circular series, whereby all of the type-bars, when extended, converge toward the center of the front side of the impact roller.

A hood, or rest, *A'*, is arranged in front of the supporting plates, and provided with padding, *B'*, to receive the type-bars when thrown back from the impact-roller.

The type-guide, *C'*, which I employ in connection with my improved type-writing machine, consists of a vertical arm, *D'*, provided at its upper end with an opening, *E'*, sufficient to allow one type to pass, and through which all the printing is done, a pointer or index, *F'*, being arranged on the bar, above the guide-opening, to indicate, when drawn down, the point where the next letter will be placed. This vertical arm, *D'*, slides in a stationary guide-arm, *G'*, secured to the rear supporting-plate, a spring, *H'*, being provided to normally hold the guide in its elevated or operative position, as shown in Fig. 1. A key-bar, *K'*, which is preferably arranged at about the center of the key-board is connected by a rod or wire, *L'*, with the lower end of the arm, *D'*, whereby, by depressing the key attached to said key-bar, the type-guide may be drawn down to enable an erasure to be made. When drawn down to the said position the index indicates the point at which to place the carriage to make any desired insertion, or to commence the line.

The ribbon-rolls, *M' M'*, are arranged at opposite ends of the platform, and are provided with bevel gears, *N' N'*, which are adapted to be engaged, respectively, by similar bevel gears, *O' O'*, upon the extremities of the transversely-disposed rotary-rod, *P'*, mounted in suitable bearings on the platform and capable of a slight longitudinal movement in said bearings, whereby it may be geared to either of the ribbon-rolls. Said rotary-rod is too short to be engaged with both ribbon rolls at once, as shown in dotted lines in Fig. 1. The rotary rod is provided at an intermediate point with a stud, *Q'*, to enable it to be moved to engage either of the rolls.

The means for operating the ribbon-rolls comprise a worm-gear, *R'*, arranged on the rotary-rod, *P'*, a worm-shaft, *S'*, carrying a bevel gear, *T'*, and a spring-actuated shaft, *U'*, carrying a bevel gear to mesh with the gear, *T'*. The shaft, *U'*, carries a coiled or spiral spring, *V'*, and a drum, *W'*, to which is attached the end of the tension-belt, *A''*, secured at the opposite end to the carriage and reeled upon the drum. The shaft, *U'*, also carries the loosely mounted bevel gear, *B''*, above mentioned, to mesh with the bevel gear, *T'*, the gear, *B''* being connected to the hub of the drum *W'* by means of a clutch, *C''*, on the shaft, to enable the carriage to be moved freely to the right, without turning the worm-shaft.

From the above description the operation of my improved type-writing machine will be apparent.

The advantages of having the line which is being written, and consequently all before it, in plain view at all times, are that mistakes can be detected at once, and can be corrected without displacing any of the parts of the machine, and furthermore the operator can read as he writes thus leaving less to the memory.

The advantages in having the type-bars located in front of the impact roller and in plain view, are that they may be cleaned and adjusted without disconnecting any of the parts of the machine, and as the hangers are arranged in upwardly concaved semi-circular series the type-bars fall upon the hood or rest with the type projecting upward, in position to be cleaned, or brushed, without pressing the keys.

The ribbon-guides consist of plate-springs, D'', arranged in pairs and parallel with each other, the inner ends of each pair being attached to the type-guide, on opposite sides of the guide-opening, whereby the ribbon is exposed only through said opening, and passing at their outer ends through guides, E'' E'', and curved downwardly over the ribbon-rolls, as shown in Fig. 1, the guides being pliable and being slidably fitted in the guides E''.

It will be seen that only a small portion of the ribbon is exposed at a time, thus avoiding the collection of dust thereon.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a type-writing machine, the combination with an impact-roller, of a vertically movable type-guide, comprising a sliding arm provided with a guide-opening, a guide in which said arm operates, key-bar connected to said arm, and spring to normally hold it in its raised position, and the type-bars pivotally mounted in position to strike through the said guide-opening, substantially as specified.

2. In a type-writing machine, the combination with an impact-roller of a guide, a spring-elevated slide mounted in said guide and having a ribbon guide attached thereto, and means to depress said slide, substantially as specified.

3. In a type-writing machine, the combination with a platen, ribbon-rolls, and means to operate the same, of a ribbon-guide comprising duplicate parallel spring plates fitted at their outer ends in guides E'' adjacent to the ribbon rolls and provided at the center of the impact-roller with an opening, and means whereby said guide may be depressed at its center, substantially as specified.

4. In a type-writing machine, the combination of the feed-mechanism having rack-bars, a pivoted guide adapted to oscillate in a plane perpendicular to the rack-bars, a pawl-bearing slide mounted for reciprocation in said guide, a line-spacing lever and means for operating the platen thereby, and connections between the lever and said pivoted guide, substantially as specified.

5. In a type-writing machine, the combina-

tion of the feed-mechanism for the carriage, having a pivoted guide, a pawl-bearing slide mounted in said guide, to engage the rack-bars, a rock shaft connected to said guide, and the line-spacing mechanism having a lever which is connected to said rock-shaft, whereby when the line-spacing lever is operated the pawls of the feed-mechanism are thrown out of engagement with the rack-bars, substantially as specified.

6. In a type-writing machine, the combination with the carriage, the spring-actuated shaft carrying a drum connected to said carriage, and the ribbon rolls, of a rotary-rod provided at its ends with gears to engage corresponding gears on the ribbon-rolls and carrying a worm-gear, and the worm-shaft meshing with said worm-gear and geared at one end to the shaft of the drum, substantially as specified.

7. In a type-writing machine, the combination of the feed-mechanism having relatively movable rack-bars, a pivoted guide adapted to oscillate in a plane perpendicular to the rack-bars, a pawl-bearing slide mounted for reciprocation in said guide, key levers, and connections between the key levers and said slide, a line-spacing lever and means for operating the platen thereby, a trip-bar arranged horizontally in operative relation to the pivoted guide, and connections between the line-spacing lever and said trip-bar, substantially as specified.

8. In a type-writing machine, the feed-mechanism for the carriage having a stationary rack-bar, a sliding rack-bar, the slide carrying the pawls to engage said rack-bars, and the thumb-screws mounted in the ends of the stationary rack-bar, to engage opposite ends of the sliding-rack-bar, all substantially as specified.

9. In a type-writing machine, the combination with a suitable frame having guides, a carriage, and pawl and ratchet feed mechanism, of a spring-actuated drum, a tension belt connecting the carriage to said drum, ribbon spools a transverse shaft P' geared to said spools and carrying a worm-gear, a worm-shaft having a worm which meshes permanently with said worm gear, and gearing between the worm-shaft and the shaft of the drum, and connected to the latter by a ratchet coupling, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JNO. A. GARNER.

Witnesses:

C. EMARSH,

R. H. CONNERS.