(No Model.) 5 Sheets—Sheet 1.

A. LOWE.

TYPE WRITING MACHINE.

No. 441,880. Patented Dec. 2, 1890.

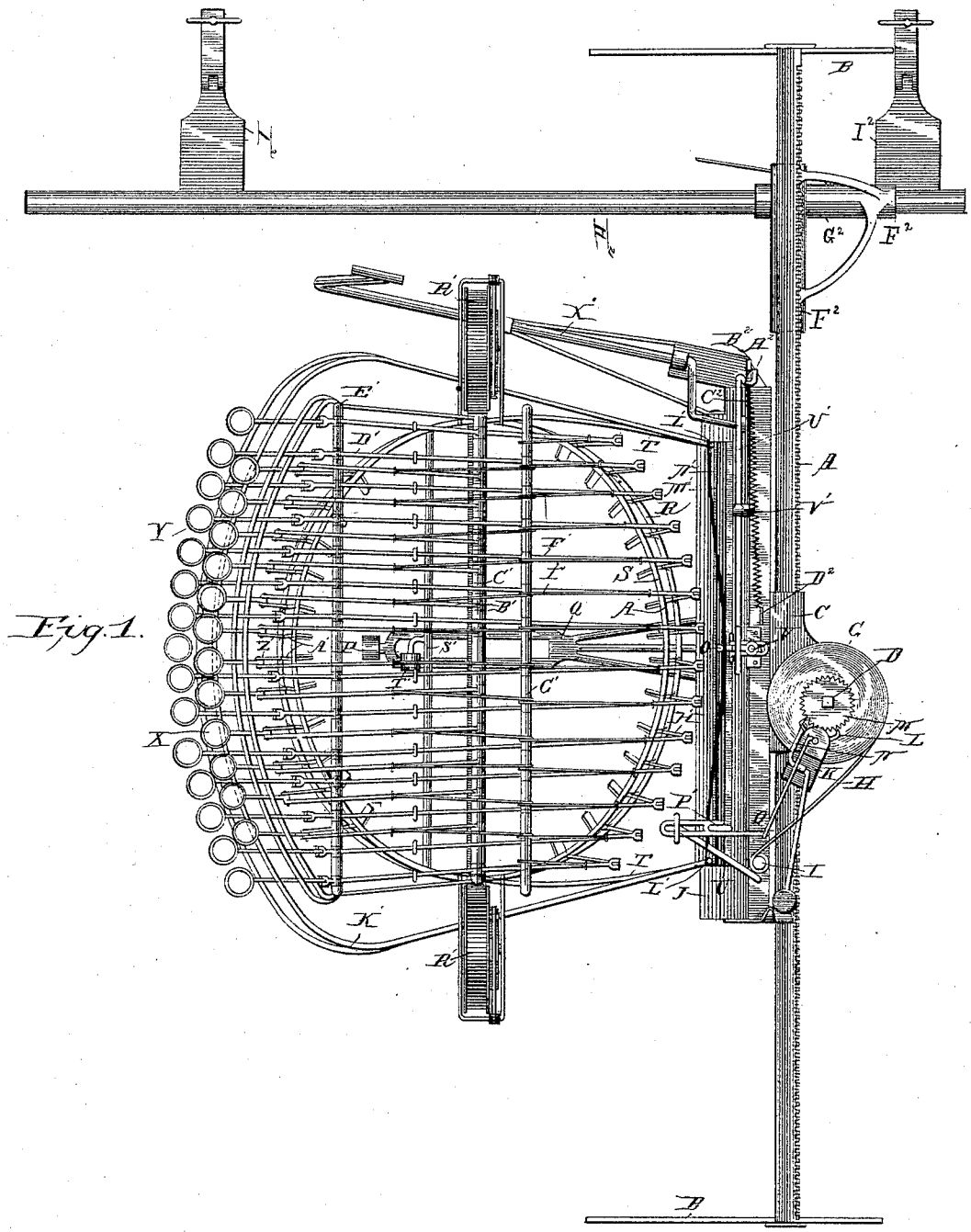


Fig. 1.

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(No Model.) 5 Sheets—Sheet 2.

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Fig. 2.

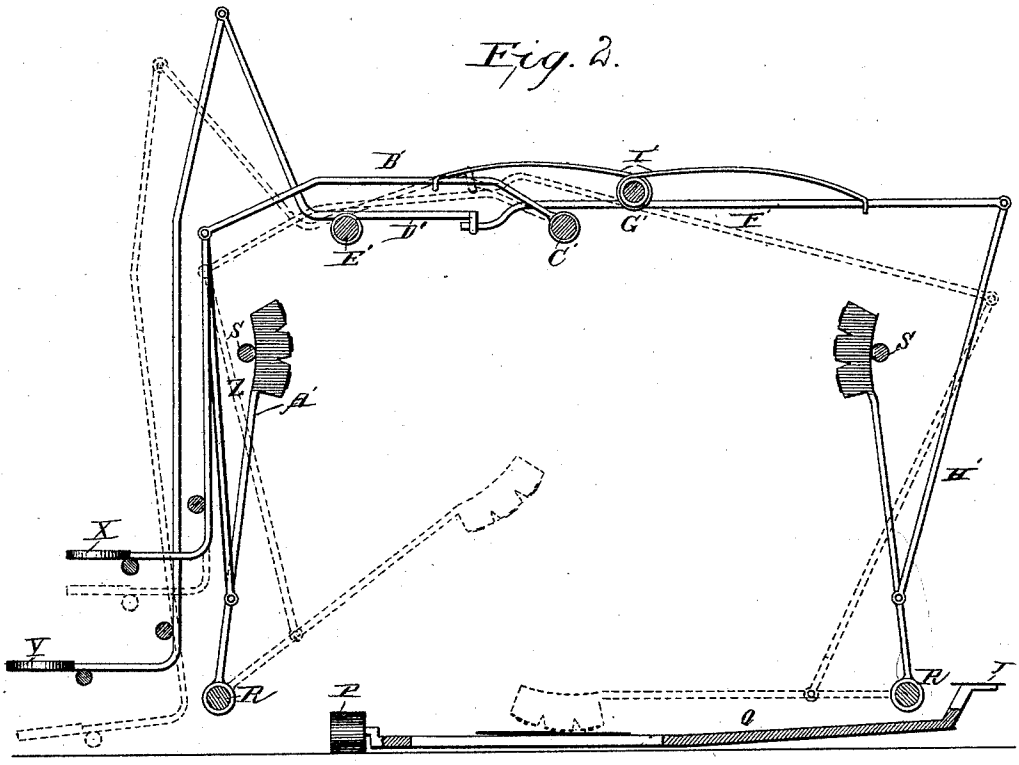


Fig. 3.

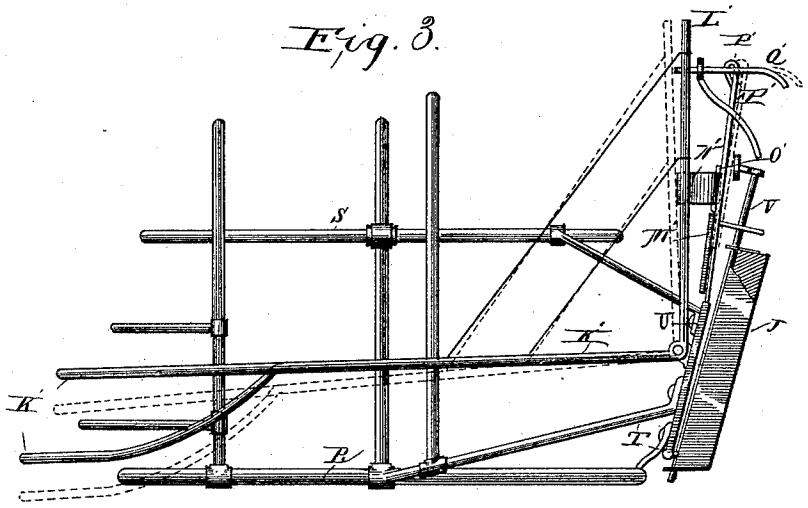
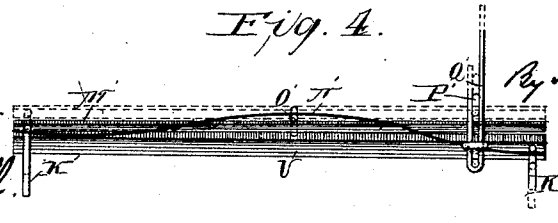


Fig. 4.



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TYPE WRITING MACHINE.

No. 441,880. Patented Dec. 2, 1890.

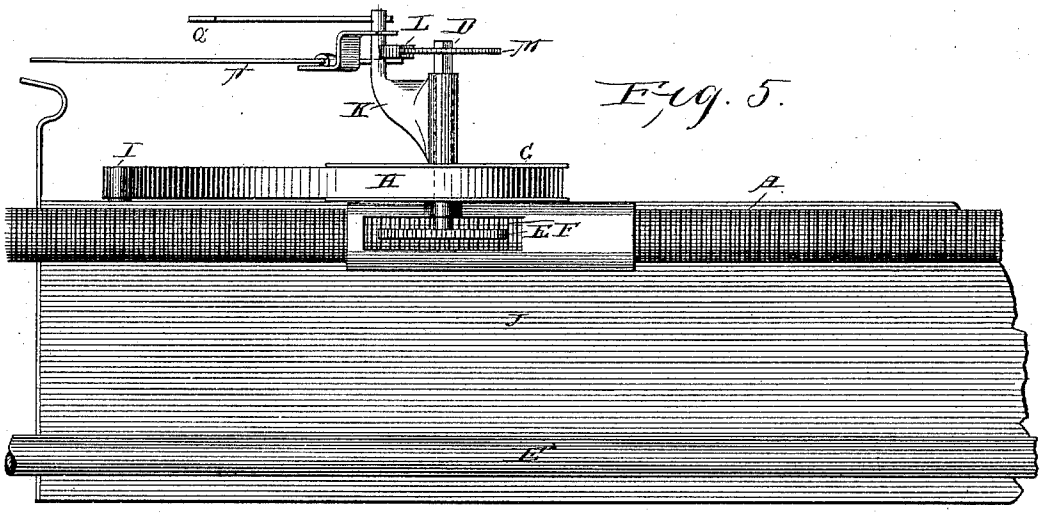


Fig. 5.

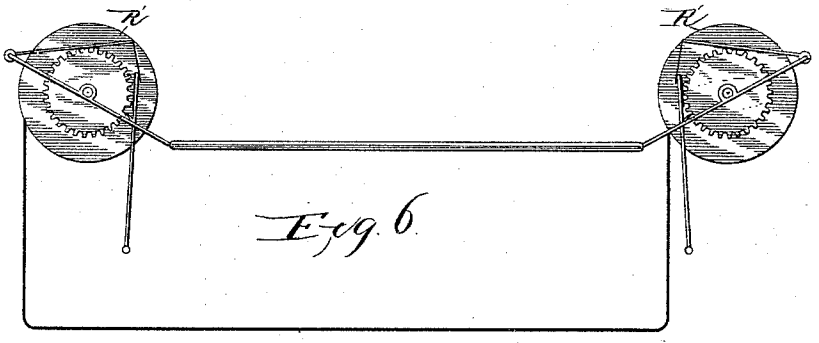


Fig. 6.

Fig. 7.

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(No Model.) 5 Sheets—Sheet 4.

A. LOWE.

TYPE WRITING MACHINE.

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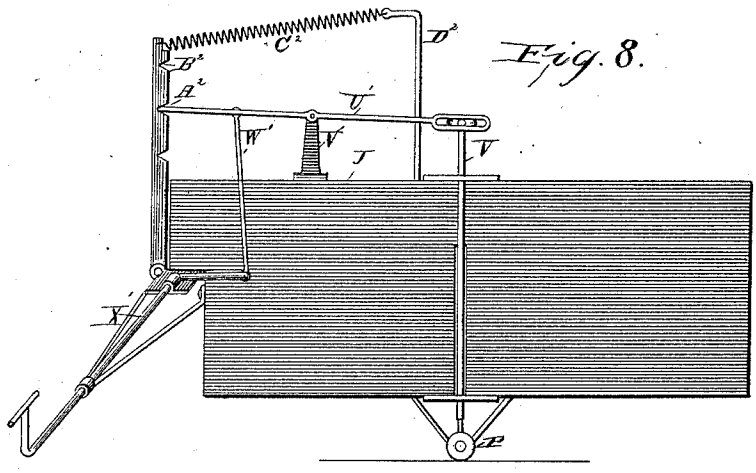


Fig. 8.

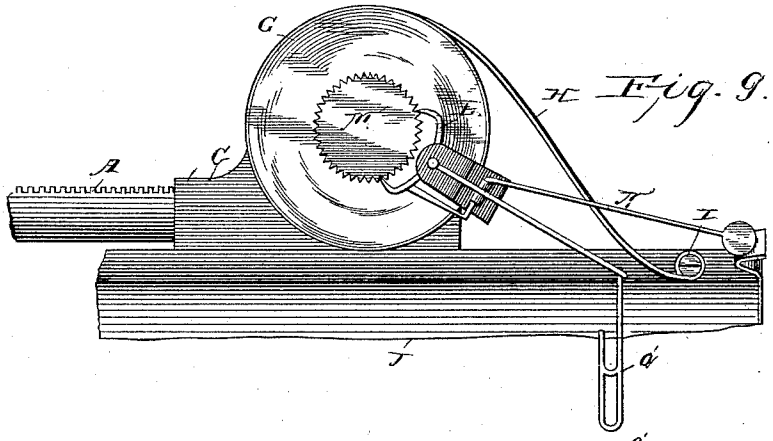


Fig. 9.

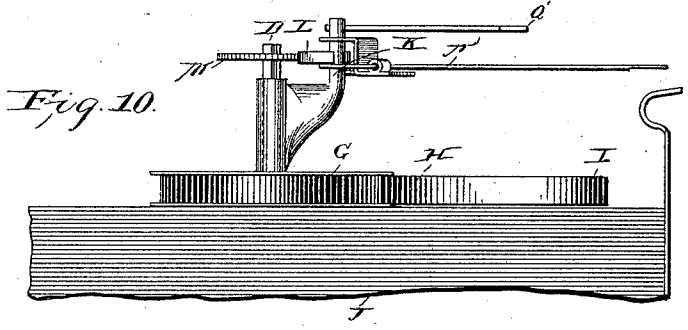


Fig. 10.

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(No Model.) 5 Sheets—Sheet 5.

A. LOWE.

TYPE WRITING MACHINE.

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Fig. 11

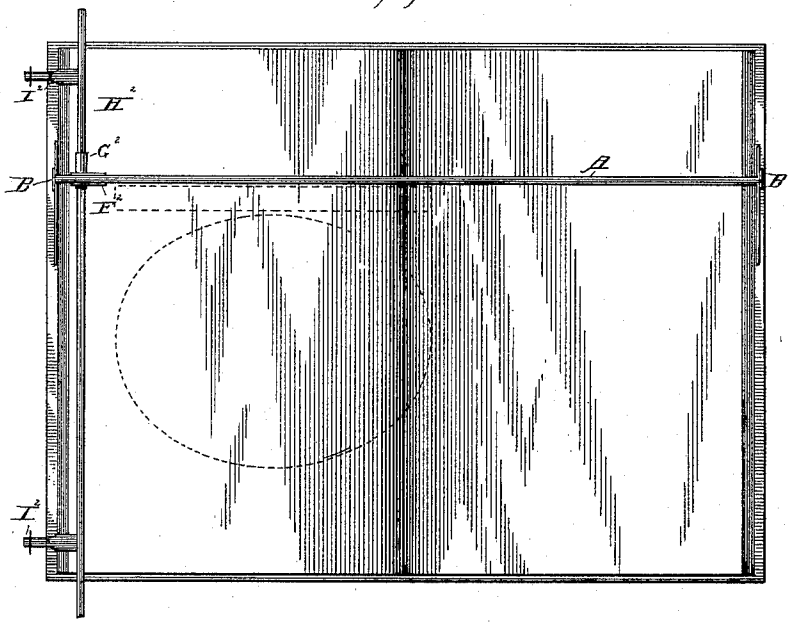


Fig. 12.

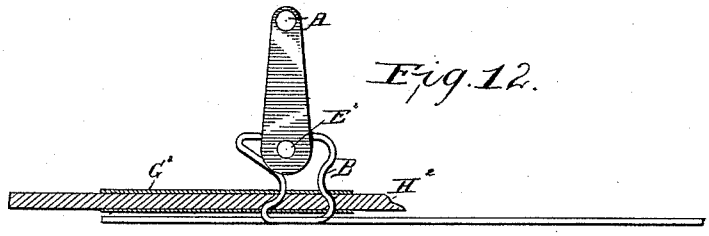
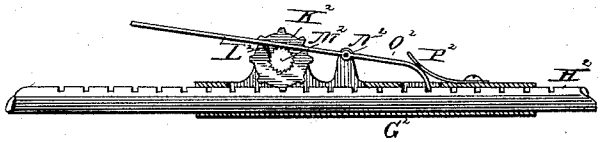


Fig. 13.



Witnesses
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UNITED STATES PATENT OFFICE.

AUSTIN LOWE, OF MINNEAPOLIS, KANSAS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 441,880, dated December 2, 1890.

Application filed April 8, 1889. Serial No. 306,492. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN LOWE, of Minneapolis, in the county of Ottawa and State of Kansas, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce a type-writer whose frame is movable with respect to a permanent base, whereby it is adapted to write in a bound book or the like where it is impossible to secure the pages to a traveling platen. It is also to produce a machine by which changes of type may be produced by shifting the plane of the printing-face of the machine.

In the accompanying drawings, Figure 1 is a top plan view of my machine in position for writing. Fig. 2 is a view of two keys and type-bars and connecting mechanism detached. Fig. 3 is a view of the frame, showing a portion of the frame for shifting its position. Fig. 4 is a view in detail of the spring for keeping the spacing-frame raised. Fig. 5 is a rear elevation of a portion of the machine, showing details of spacing mechanism. Fig. 6 is a view of the inking-ribbon mechanism detached. Fig. 7 is a view showing the relative positions of the frame of the machine as shifted upon different centers for printing. Fig. 8 shows the portion of the shifting mechanism in detail. Fig. 9 is a top plan view of Fig. 5. Fig. 10 is a view similar to that shown in Fig. 5, taken from the opposite side. Fig. 11 is a diagrammatical view showing the spacing-bar proper and transverse spacing-bar in position on a book. Fig. 12 is a view of a leg of the spacing-bar proper detached. Fig. 13 is a view of the vertical spacing mechanism detached.

Referring to the letters upon the drawings, A indicates a ratchet-toothed spacing-bar adapted to be supported upon legs B.

C indicates a frame surrounding and adapted to slide longitudinally upon the spacing-bar, and which carries upon the journal D the toothed wheel E, that engages with the teeth of the spacing-bar that is accessible to it through the slot F in the frame. The same journal carries above the spacing-bar the circular spring-box G, in which is coiled a spring H, secured at one end to the shaft and at the other end to a pin I, that is firmly secured to the plate J.

Secured to the upper side of the spring-box is a bracket K, which carries a pawl L, that is adapted to engage with the teeth of a ratchet-wheel M, that is secured to the end of the journal D. The pawl is longitudinally movable upon its bracket-support and normally engages with the teeth of its ratchet-wheel, but can be lifted for the sake of ready adjustment by means of the lever N, that is pivotally secured to a support upon the bracket.

The main frame of the machine is secured to the plate J, by means of which it is adapted to slide longitudinally upon the spacing-bar upon the anti-friction roller P, which is carried upon the slotted support Q, also secured to the plate J. The frame proper consists of a curved pivot-piece R, to which is secured a correspondingly-curved piece S, supported by it above it, and of the support T, by which it is pivotally secured to the movable plate U, which is substantially parallel with the plate J, and is movably secured to it by means of the plunger V, carried in suitable bearings upon it.

The type-bars (see Fig. 2, in which are illustrated the two kinds of bars and their operating mechanism and from which it is possible to learn the operation of all) are arranged upon the curved pivot-piece R, and those upon opposite sides are respectively connected by a system of levers with two rows of keys X and Y, respectively. The keys X are adapted to slide vertically in the frame, and are pivotally secured at their upper end to pitmen Z, which connect them at their lower end with the type-bars A′. At the point of union between the key and the pitmen is pivotally secured a lever B′, that is pivoted at its opposite end to the cross-bar C′. The keys Y are also vertically sliding in the frame, and are pivotally connected at their upper end with levers D′, that are pivotally carried upon the bar E′. They also engage operatively with another lever F′, which is pivoted to the bar G′, and by means of the pitman H′ communicates motion to its proper type-bar.

It will be readily understood from the foregoing description that by depressing either one of the keys a certain type is struck down-

wardly against the face of a page to be printed upon.

In order that the type-bars may promptly assume their upper positions as soon as they have been operated, I provide upon the bar G springs I′, adapted to lift the levers B′ and F′, and thereby operate to lift a pair of type-bars. The type-bars are in themselves of peculiar construction and are adapted especially for this kind of machine. They have a plurality of type arranged to strike on different centers, so that by shifting the center of the machine one of its faces will strike flat upon the surface to be printed or platen, and upon again changing the centers another type upon the same type-bar will strike flat upon its face.

K′ indicates a frame-piece hinged to the movable plate. It is divided in its forward part, so as to pass just beneath and in the road of the two rows of keys, so that by the depression of a key in either row it will be swung upon its hinge. It carries at its rear end the uprights L′, which are connected together to secure uniformity of motion by the cross-piece M′, and is held up at its front side close under the keys by the spring N′, that is secured to a projection O′ upon the movable plate U, and which presses at its outer ends against its upright pieces.

To the cross-piece M′ is secured a standard P′, which engages by means of pitmen Q′ with the pawl that operates the spacing mechanism. By this means it will be understood that when every key is struck to operate a type it will at the same time operate the pawl of the spacing mechanism, and when released the spring H will carry the frame one space over the face of the paper to be printed.

Inking-ribbon rollers R′ are carried upon suitable supports upon the frame of the machine, and are provided in the usual manner with pawl-and-ratchet movements operatively connected with the frame-piece that operates the spacing mechanism, so that by the depression of this frame-piece the inking-ribbon is advanced a short distance simultaneously with the operation of the spacing mechanism. This, however, may be of any suitable and ordinary kind, and does not appear to require explanation in detail.

In Fig. 8 is illustrated the mechanism for shifting the plane of the frame for the purpose of printing from the different type upon the faces of the type-bars. It preferably consists in mechanism adapted to lift the movable plate U and the frame of the machine secured thereto, and the frame is therefore provided with a cross-piece S′ and a friction-roller T′, adapted to travel along one side of the slotted support Q, so as to permit its easy movement by the plunger V. A suitable form of mechanism for performing this function is illustrated, which consists in a lever U′, pivotally secured to a projecting support V′, secured to the plate J. This lever is loosely secured at one end to the plunger V and at its opposite end to the pitman W′, by which it is loosely secured to the crank-lever X′, also carried upon suitable bearings that are carried by the plate J. By turning this crank-lever one way or the other the frame is shifted backward or forward at pleasure. In order to secure it in position after it has been adjusted, I provide upon the end of the lever U′ a catch A^2, adapted to engage with notches in the detent B^2, which is pivotally secured at its lower end to the plate J, and is held against the catch by the spring C^2, which is at one end secured to the detent and at the other end to a standard D^2, carried upon the plate J.

It is unnecessary to explain more in detail than has already been done the operation of the machine, because it will be readily understood that when the spacing-bar has been set in position and the frame of the machine moved across the page to be printed its left-hand side of the page, which point may in practice be of course regulated by an ordinary guide upon the spacing-bar, the machine will be manipulated by striking keys in an ordinary type-writer, and the operation will be performed in the manner already explained.

In order to secure vertical adjustment upon the page to be printed, I have illustrated and will explain mechanism for performing that operation, but of course any suitable mechanism may be employed. The kind illustrated consists of a smooth bar E^2, parallel to the spacing-bar A and secured below it to the legs B. Upon this is a sliding collar F^2, that carries at right angles to it another collar G^2, adapted to slide upon the toothed transverse spacing-bar H^2, which is adapted to be secured to the book to be printed by means of the clamps I^2. Carried upon the collar F^2 is a toothed wheel K^2, adapted to engage with the teeth in the transverse spacing-bar, and provided with a pawl L^2, pivoted to the collar and ratchet-wheel M^2. Upon a fulcrum N^2, projecting from the collar, is pivotally secured a lever O^2, normally kept in engagement with the teeth of the transverse spacing-bar by the spring P^2. The free end of this lever engages with the pawl L^2, so that by striking it the lever is simultaneously disengaged from the teeth of the transverse spacing-bar, and a partial rotation is imparted to the toothed wheel K^2 by the lever striking against the pawl and driving the ratchet forward. The rotation of the toothed wheel causes the collar G^2 to slide upon the transverse spacing-rod, and motion is thereby communicated to the machine and brings it down a space. If it should be desired, anti-friction rollers may be employed upon the legs B of the spacing-bar proper, but that is not necessary.

What I claim is—

1. In a type-writing machine, the combination, with a plate adapted to slide upon the spacing-bar, of a vertically-movable plate se-

cured thereto and printing mechanism secured to the vertically-movable plate and provided with type-bars having the faces of its type upon different planes, whereby the movement of the vertically-movable plate will cause the printing mechanism to print from different type, substantially as set forth.

2. In a type-writing machine adapted to print upon a fixed sheet, the combination, with a spacing-bar adapted to be secured in fixed relation to the sheet, of a main frame movably secured to the spacing bar and provided with the slotted support Q, through the slot of which the type are adapted to be struck for the purpose of printing, and a roller upon the end of said support, substantially as set forth.

3. In a type-writing machine, the combination of type bars having the faces of their type arranged upon different planes, and a frame carrying the type-bars, pivotally carried upon suitable supports and adapted to be rotated upon its pivot, with mechanism adapted to impart such rotation to the frame, substantially as set forth.

4. In a type-writing machine, the combination, with a curvilinear pivot-piece R, of type-bars arranged thereon, two rows of keys, each key in the respective rows being connected by a system of levers with a type-bar upon opposite sides of the pivot-piece, respectively, the bar G′, extending across the frame of the machine above the curvilinear pivot-piece R, and a spring coiled around the bar G′ and connected at its opposite ends to one of the levers of opposite type-bars, respectively, whereby each of said type-bars is adapted to be returned to its normal position after having been struck, substantially as set forth.

Dated this 12th day of February, 1889.

AUSTIN LOWE.

Witnesses:
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E. O. BONHAM.