

(No Model.)

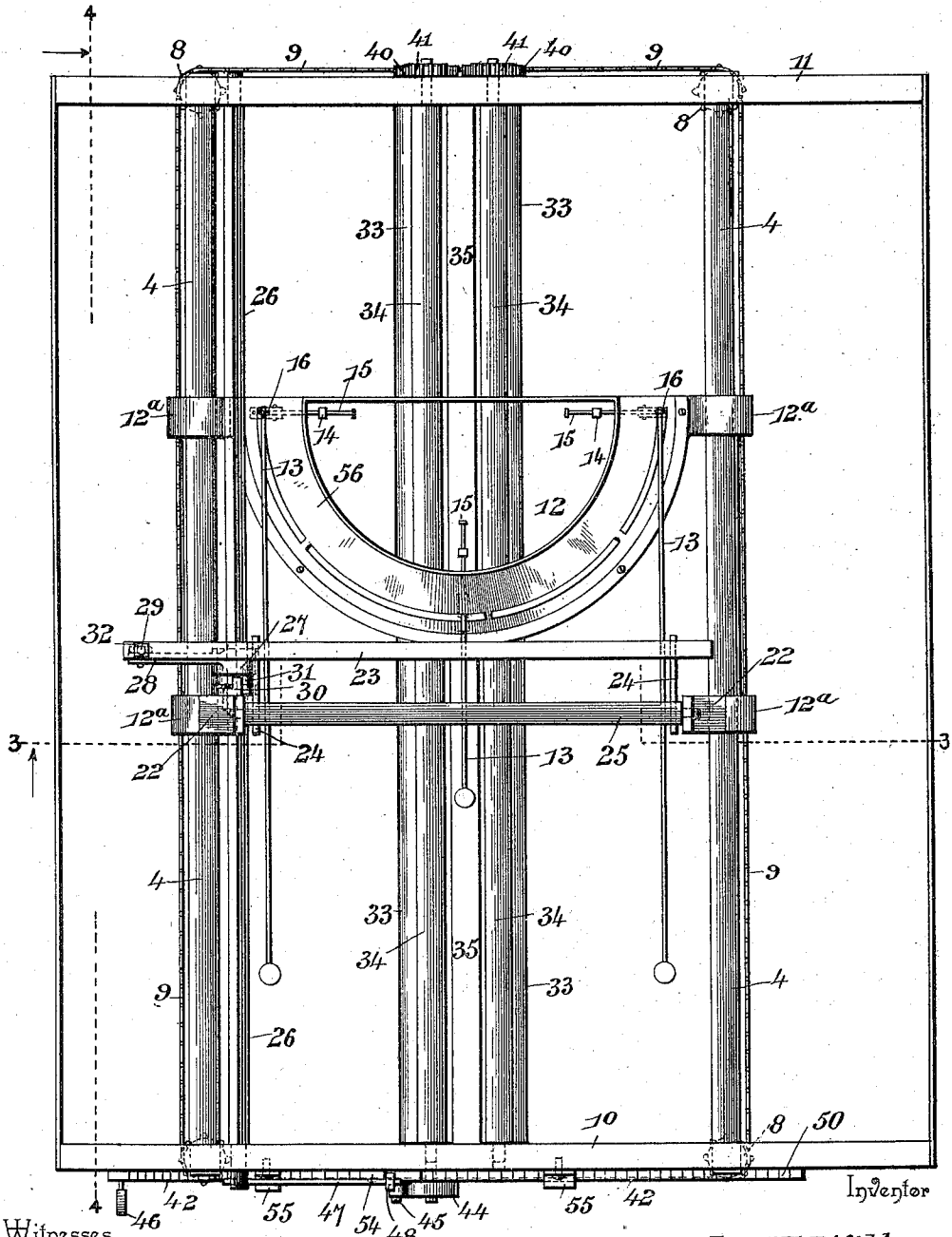
4 Sheets—Sheet 1.

L. E. WILKES.
TYPE WRITING MACHINE.

No. 575,190.

Patented Jan. 12, 1897.

FIG. 1.



Witnesses

Jas. H. McArthur
O. B. Hays

By this Attorneys,

Lincoln E. Wilkes

C. Snow & Co.

(No Model.)

4 Sheets—Sheet 2.

L. E. WILKES.
TYPE WRITING MACHINE.

No. 575,190.

Patented Jan. 12, 1897.

FIG. 8—

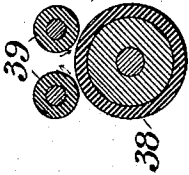


FIG. 9—

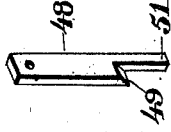


FIG. 7—

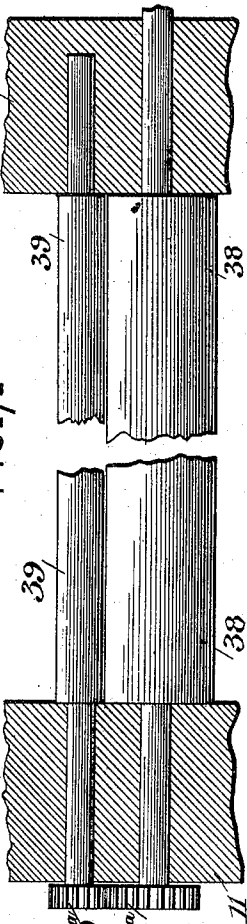
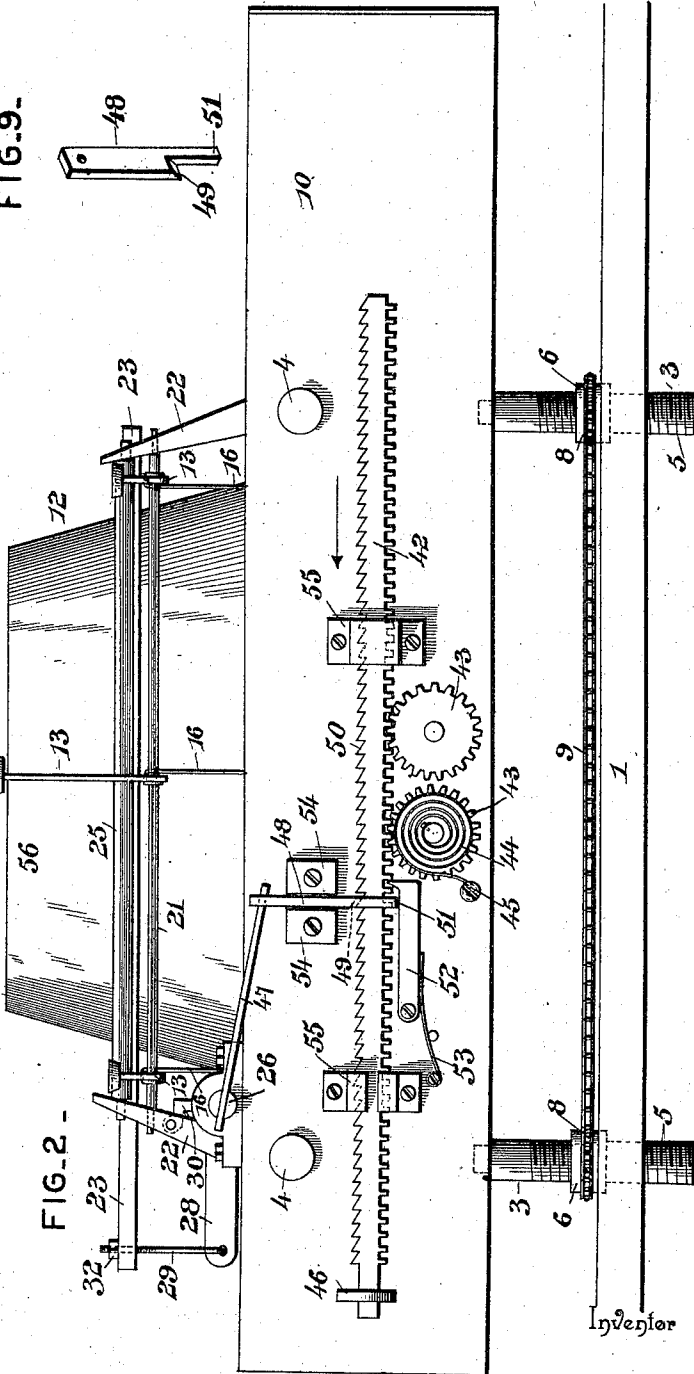


FIG. 2—



Witnesses

Jas. H. McLaughlin
[Signature]

By his Attorneys, Lincoln E. Wilkes

Cashnow & Co.

(No Model.)

4 Sheets—Sheet 3.

L. E. WILKES.
TYPE WRITING MACHINE.

No. 575,190.

Patented Jan. 12, 1897.

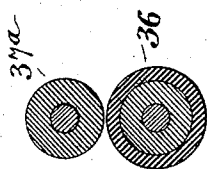
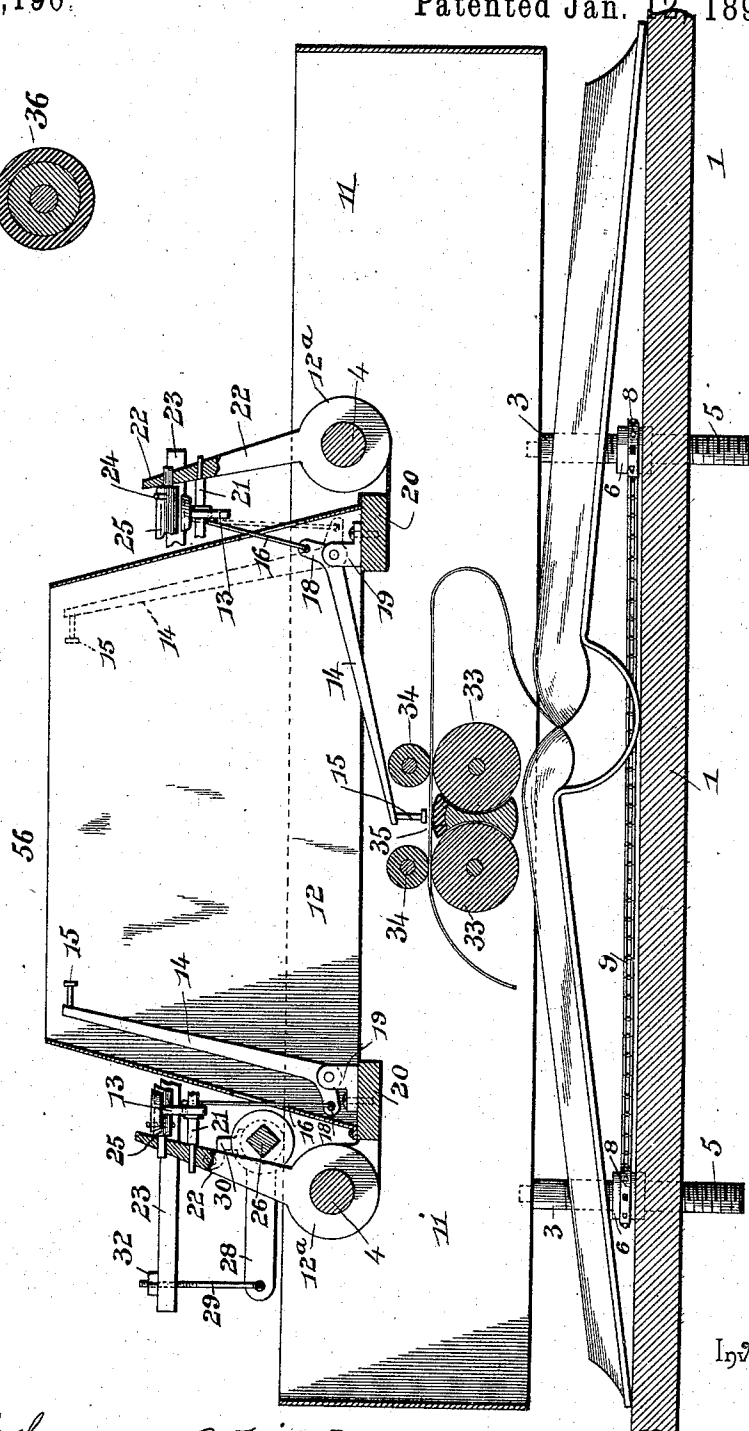


Fig. 6.



Inventor

Witnesses

Jas. E. McClathrum

W. E. Hoyle

By *his* Attorneys,

Lincoln E. Wilkes

CA Snowles

L. E. WILKES.
TYPE WRITING MACHINE.

No. 575,190.

Patented Jan. 12, 1897.

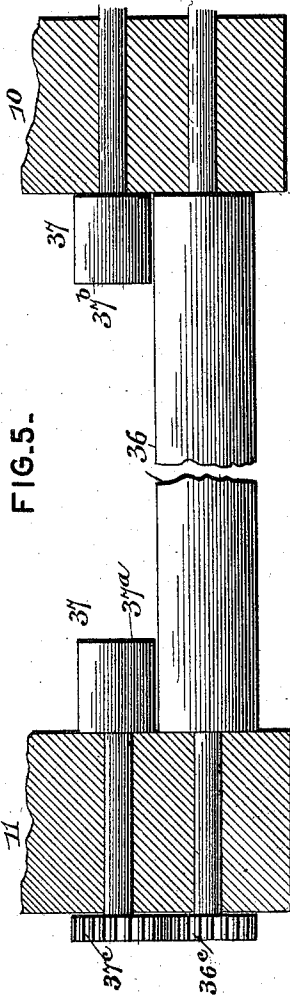


FIG. 5.

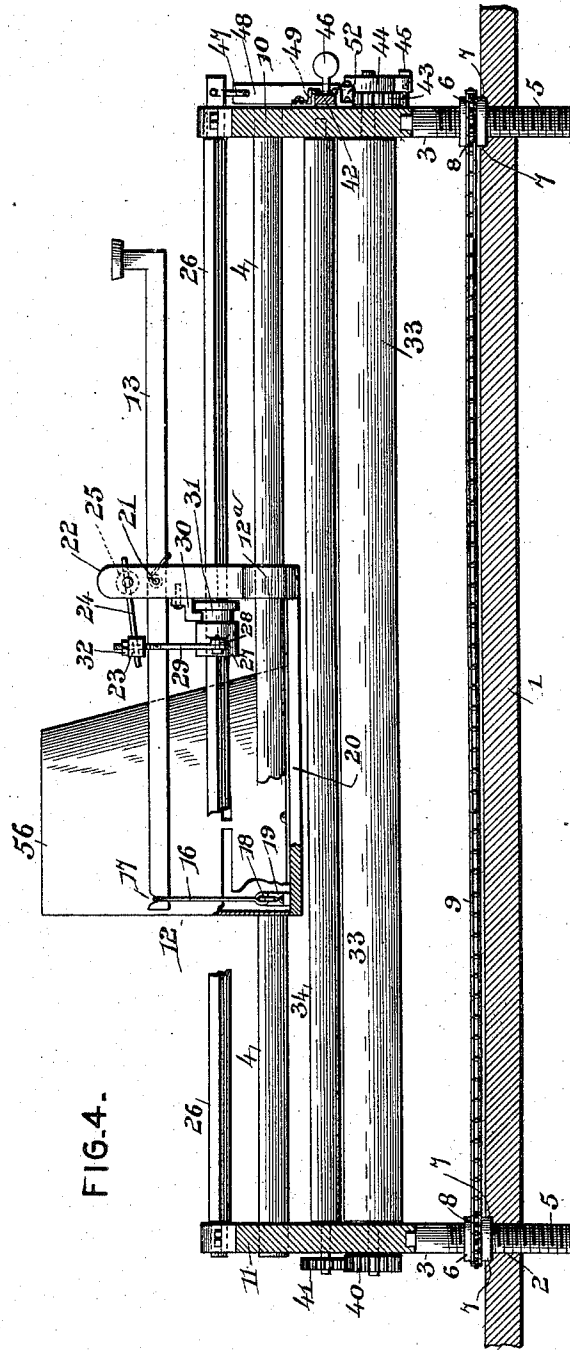


FIG. 4.

Witnesses

James H. McCutcheon
W. D. Boyle

By *this* Attorneys,

Lincoln E Wilkes

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

LINCOLN E. WILKES, OF HILLSBOROUGH, OREGON.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 575,190, dated January 12, 1897.

Application filed January 17, 1896. Serial No. 575,903. (No model.)

To all whom it may concern:

Be it known that I, LINCOLN E. WILKES, a citizen of the United States, residing at Hillsborough, in the county of Washington and State of Oregon, have invented a new and useful Type-Writing Machine, of which the following is a specification.

My invention relates to type-writing machines, and has for its object to provide a machine adapted for book as well as general work, the same being constructed with the minimum number of parts; to provide letter and word spacing mechanism whereby neither the book nor the carriage upon which the printing mechanism is mounted is fed in the direction of the line of writing, said letter and word spacing mechanism being constructed to feed the page or sheet, whereby complication of construction and heaviness in operation are avoided; to provide improved means for communicating motion from the key-levers to the letter and word spacing mechanism, and to provide means for adjusting the printing mechanism toward and from the plane of the stationary base to accommodate books of different thicknesses.

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

In the drawings, Figure 1 is a plan view of a type-writing machine constructed in accordance with my invention. Fig. 2 is a front view of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 is a longitudinal section on the line 4 4 of Fig. 1. Fig. 5 is a detail longitudinal section showing a modified form of paper-feed rolls. Fig. 6 is a transverse view of the same. Fig. 7 is a detail longitudinal section showing a second modified form of paper-feed rolls. Fig. 8 is a transverse section of the same. Fig. 9 is a detail view of the carriage-feed pawl detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a stationary base provided with openings 2, in which are arranged vertical standards 3 for supporting the carriage-guides 4, said standards being threaded, as shown at

5, and engaged by feed-nuts 6, which are seated, as shown at 7, upon the base 1. These feed-nuts carry chain-gears 8, and an endless chain 9 extends around the standards and traverses said chain-wheels, whereby all of the feed-nuts may be operated simultaneously to cause upward or downward movement of the carriage-guides by a single movement of the chain.

The carriage-guides 4 are secured at their front and rear extremities in front and rear plates 10 and 11, supported by and connecting the front and rear standards 3, and the carriage 12 is mounted to slide upon said guides in a direction transverse to the line of writing to form the spaces between lines. The carriage is provided with eyes 12^a, which embrace and slide upon the guides 4.

The printing mechanism is mounted upon the carriage and consists, essentially, of key-levers 13, type-bars 14, type-heads 15, and connections between the key-levers and the type-bars. In the construction illustrated these connections consist of tension-rods 16, connecting the rear hooped ends 17 of the key-levers with offset arms 18 of the type-bars, the type-bars being mounted in clips 19, properly spaced upon the platform 20 of the carriage. The key-levers are mounted upon a common pivot-rod 21, connecting uprights 22 at the front of the carriage, and they are mounted under the spacing-bar 23, whereby the operation of either of the key-levers will cause a vertical movement of the space-bar, said space-bar being connected by means of arms 24 to the rock-shaft 25, also mounted in bearings near the upper ends of the uprights 22.

Mounted at its front and rear ends in bearings in the main frame is a rock-shaft 26, which is arranged parallel with the carriage-guide and is preferably of angular cross-sectional construction to fit a corresponding opening in a sleeve 27, which forms part of a spacing-lever 28, and this spacing-lever is connected by means of a rod 29 with the space-bar 23, whereby the depression of either of the key-levers causes the partial rotation or rocking movement of the shaft 26, whereas the sleeve 27 is free to slide longitudinally upon said shaft according to the movement of the carriage. Motion is communicated

from the carriage to the sleeve by means of an angle-clip 30, engaging an annular groove 31 in the collar. Means for taking up looseness in the connections between the space-bar 23 and the spacing-lever 28 consist of a nut 32, threaded upon the upper extremity of the rod 29 and bearing upon the upper surface of the space-bar.

Mounted at their front and rear extremities in suitable bearings in the main frame, or, as shown in the drawings, in the front and rear plates 10 and 11, are the lower and upper paper-feed rolls 33 and 34, between which is adapted to extend the leaf of a book or other sheet to receive the impressions of the printing mechanism, as shown in Fig. 3. In Figs. 1 to 4, inclusive, the lower and upper paper-feed rolls are arranged in duplicate upon opposite sides of a fixed platen or printing-surface 35, (also shown in Fig. 3,) said platen or printing-surface preferably having a convex surface which is disposed between two pairs of feed-rolls and is traversed by the portion of the leaf or sheet held taut by those rolls. The type-heads strike between the upper feed-rolls and come in contact with the paper at the center of the convexity of the platen or printing-surface.

In Figs. 5 and 6 I have shown a slightly modified form of paper-feed rolls in which only a single lower roll 36 and a single upper roll 37 are employed, said rolls having their axes arranged in a common vertical plane. In this case the lower feed-roll, which is of large diameter, also performs the function of a platen, and in order to allow the type-heads to come in contact with the paper in the vertical plane of the axis of the main or lower roll 36 the upper or auxiliary roll 37 is divided to form sections 37^a and 37^b, which respectively engage the paper at its upper and lower edges.

In Figs. 7 and 8 I have shown still another modified form of paper-feed rolls, in which a single lower roll 38 and duplicate upper rolls 39 are employed, the lower roll performing, as in the construction illustrated in Figs. 5 and 6, the function of a platen, while the auxiliary rolls 39 are spaced apart and are arranged upon opposite sides of the plane of operation of the type-heads. This allows the type-heads to strike the surface of the paper upon the upper side of the main roll 38 between the contiguous surfaces of the auxiliary rolls 39.

The paper-feed rolls are connected at one end for simultaneous rotation in opposite directions by means of intermeshing gears 40 and 41, as shown clearly in Fig. 4, each pair of gears 40 41 for the rolls 33 34 being independent of the other pair, and motion is communicated to the lower or main rolls to produce a step-by-step forward movement of the paper to form the spaces between letters and words by means of a rack-bar 42, gears 43 on the front extremities of the main feed-rolls, and connections between the feed-rack and

the rock-shaft 26. In order to communicate simultaneous movement in a uniform direction to the gears 43, I provide means for imparting longitudinal movement to the rack 42, and in the construction illustrated this longitudinal movement is imparted to the rack by means of a spring 44, coiled upon the spindle of one of the lower feed-rolls and attached at one end to a fixed retaining-screw 45. Therefore movement of the rack in one direction, namely, that contrary to the direction indicated by the arrow in Fig. 2, will wind the spring, said movement being preferably accomplished manually by means of a finger-hold 46, secured to one end of the rack, whereas movement of the rack in the opposite direction, or in that direction indicated by the arrow in said Fig. 2, is caused by the spring 44. In order to control this forward movement of the rack and limit it to a step-by-step movement suitable for forming the spaces between letters and words, I employ an arm 47, carried by the rock-shaft 26 and connected to a reciprocatory operating-pawl 48, having a tooth 49 to engage a ratchet 50, carried by the rack. This operating-pawl is extended to form a trip-finger 51, which is arranged in operative relation with a stop-dog 52, normally in engagement with the rack-teeth and held in such engagement by means of an actuating-spring 53.

As above described, the depression of each key-lever causes a corresponding movement in the opposite direction of the space-bar 23, and this movement of the bar 23 is communicated through suitable connections to the rock-shaft 26, whereby at each depression of a key-lever the free end of the crank-arm 47 is depressed, whereas the release of the key-lever and the return thereof to its normal position allows a corresponding return or upward movement of the crank-arm. The depression of the free end of the crank-arm 47 causes the engagement of the tooth 49 of the operating-pawl with the ratchet, and at the same time the trip-finger 51 disengages the stop-dog 52 from the rack.

The teeth of the rack and ratchet are arranged in such relative positions that upon the disengagement of the stop-dog 52 from the rack the latter will move forward, or in a direction indicated by the arrow in Fig. 2, a distance less than the interval between two contiguous teeth of the rack, but sufficient to prevent the dog upon being released by the trip-finger from returning into engagement with the same space of the rack-bar as that from which it has been withdrawn. In other words, when the dog is in engagement with a certain tooth of the rack the tooth 49 of the operating-pawl is slightly in advance of the plane of the corresponding tooth of the ratchet, whereby upon the depression of the operating-pawl and the consequent disengagement of the stop-dog from the rack the rack-bar moves forward until the ratchet-tooth is checked by engagement with the tooth 49. Upon the upward

movement of the operating-pawl, therefore, the stop-dog checks the further forward movement of the rack under the tension of the operating-spring 44 by engagement with the succeeding tooth, said further forward movement of the rack occurring as soon as the tooth 49 is withdrawn from the ratchet-tooth with which it has been engaged during the depression of the crank-arm 47. The operating-pawl is guided in its movements by means of clips 54, and the rack-bar is similarly guided by the clips 55.

In the above description I have referred to letter and word spacing mechanism adapted for operating the twin main or lower feed-rolls shown in Figs. 1 to 4, inclusive, but it is obvious that similar mechanism may be employed for operating the feed-rolls illustrated in Figs. 5 to 8, inclusive.

Simultaneous motion of the feed-rolls 36 and 37 (shown in Figs. 5 and 6) may be secured by any suitable means, such as the intermeshing pinions 36^c and 37^c shown at the left in Fig. 5 and adapted to be duplicated (not shown) at the right to turn the other member 37^b of the divided roll 37, and similar simultaneous motion of the feed-rolls 38 and 39 (shown in Figs. 7 and 8) may be secured by means of intermeshing pinions 38^a and 39^a. (Shown in Fig. 7.)

In order to adjust the parts for operation, as, for instance, when it is desired to print upon the page of a book, the book is placed upon the stationary base 1 between the standards of the main frame, and the adjustment of said frame is accomplished by means of the chain 9 to arrange the feed-rolls contiguous to the plane of the side of the book upon which it is desired to print. The book is also arranged with its opening joint or crease under the outer side of one of the main or lower feed-rolls, as clearly shown in Fig. 3, the free or outer edge of the leaf being passed between the feed-rolls. In operation the successive depression of the key-levers causes the feed of the page or sheet in the direction of the line of writing through the letter and word spacing mechanism above described, and when it is desired to space between lines or to adjust the mechanism for printing the first line of a page or sheet the carriage is moved upon the guides 4 by hand.

It is obvious that in order to secure accuracy of spacing between the lines line-spacing mechanism may be used in this connection, but as this forms no part of my present invention I have not illustrated it in the drawings.

A hood 56 is preferably employed for protecting the type-bars, the same being of trunco-conical construction and supported by the platform of the carriage.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a type-writing machine, the combination with a stationary base, of a main frame having carriage-guides, supports for connecting the main frame to the base, paper-feed rolls mounted upon the frame parallel with the base, and means for adjusting the frame to vary the interval between the feed-rolls and the base, substantially as specified.

2. In a type-writing machine, the combination with a stationary base, of a frame having guides for supporting a carriage and printing mechanism, standards connected to the frame, and feed-nuts seated upon the base and engaging threaded portions of the standards, substantially as specified.

3. In a type-writing machine, the combination with a stationary base, of a frame supporting printing mechanism, standards connected to the frame, feed-nuts seated upon the base and engaging threaded portions of the standards, and an endless chain traversing chain-wheels secured to the feed-nuts, substantially as specified.

4. In a type-writing machine, the combination of a frame, and carriage-guides arranged transverse to the line of writing, a carriage mounted upon said guides and carrying printing mechanism, paper-feed rolls mounted in the frame with their axes transverse to the line of writing, and letter and word spacing mechanism connected to the feed-rolls to impart a step-by-step rotary movement thereto, substantially as specified.

5. In a type-writing machine, the combination with a frame having carriage-guides arranged transverse to the line of writing, a carriage mounted upon said guides and carrying printing mechanism, main lower feed-rolls mounted in the frame with their axes transverse to the line of writing, auxiliary upper rolls, a stationary platen or printing-surface arranged between the main or lower feed-rolls, and letter and word spacing mechanism for imparting a step-by-step rotary movement to the feed-rolls, substantially as specified.

6. In a type-writing machine, the combination with a frame having carriage-guides, a carriage mounted upon said guides and carrying printing mechanism, paper-feed rolls mounted upon the frame transverse to the line of writing, a longitudinally-movable spring-actuated rack meshing with a gear on one of the feed-rolls and provided with ratchet-teeth, a spring-actuated stop-dog engaging the rack-teeth, an operating-pawl having a tooth to engage the ratchet-teeth and a trip-finger to disengage the stop-dog when its tooth is brought into engagement with the ratchet-teeth, and means for communicating motion from the printing mechanism to the operating-pawl, substantially as specified.

7. In a type-writing machine, the combination with a frame having carriage-guides, a carriage mounted upon said guides and car-

rying printing mechanism, paper-feed rolls mounted upon the frame and provided at one end with gears, a longitudinally - movable rack-bar meshing with the gears, said rack-bar carrying ratchet-teeth, a storage-spring operatively connected with one of the paper-feed rolls and adapted through one of said gears to communicate longitudinal movement to the rack-bar, a spring-actuated stop-dog arranged in operative relation with the rack-teeth, an operating-pawl having a tooth adapted to engage the ratchet-teeth and provided with a trip-finger to disengage the stop-dog from the rack-teeth, and operating connections between the printing mechanism and the pawl, substantially as specified.

8. In a type-writing machine, the combination of a frame having carriage-guides, a carriage mounted upon said guides and carrying printing mechanism, a rock-shaft mounted in the frame parallel with the carriage-guides, a spacing-lever mounted to slide upon the rock-shaft and connected to the carriage to prevent independent longitudinal movement thereof, connections between the key-levers and said spacing-lever whereby the depression of a key-lever causes the oscillation of the spacing-lever and a corresponding movement

of the rock-shaft, paper-feed rolls mounted upon the frame, and mechanism connecting the rock-shaft to the paper-feed rolls, substantially as specified.

9. In a type-writing machine, the combination of a frame having carriage-guides, a carriage mounted upon said guides and carrying printing mechanism including key-levers, a space-bar arranged in the paths of the key-levers, a rock-shaft supporting the space-bar, a second rock-shaft arranged parallel with the carriage-guides, a spacing-lever mounted to slide upon said second rock-shaft and operatively connected with the space-bar, said spacing-lever being connected to the carriage to prevent independent longitudinal movement thereof, paper-feed rolls mounted upon the frame parallel with the carriage-guides, and mechanism for communicating motion from the rock-shaft to the paper-feed rolls, 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.

LINCOLN E. WILKES.

Witnesses:

J. I. KNIGHT,

C. W. WILLIAMS.