

(No Model.)

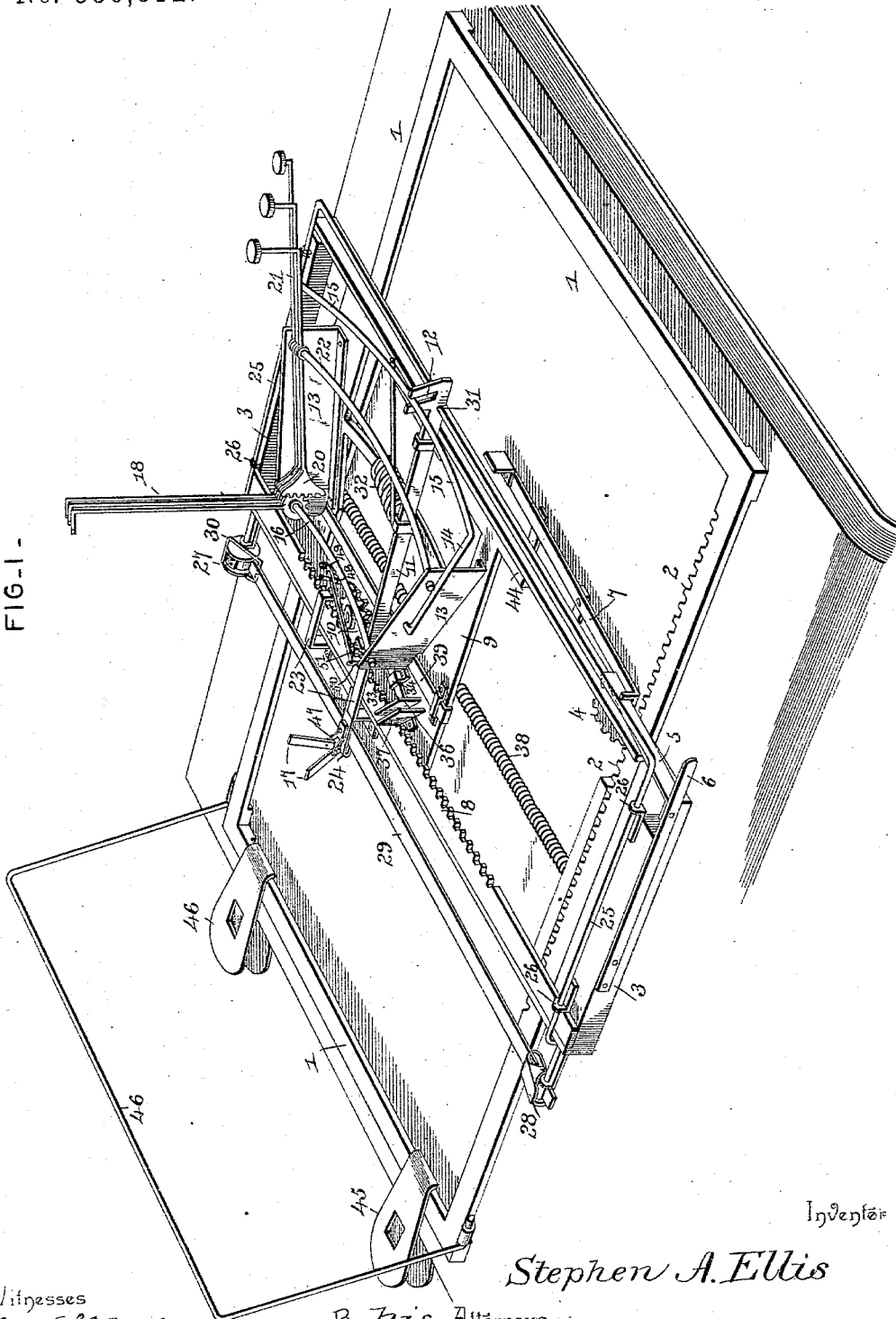
4 Sheets—Sheet 1.

S. A. ELLIS.
TYPE WRITING MACHINE.

No. 556,812.

Patented Mar. 24, 1896.

FIG. 1 -



Inventor

Stephen A. Ellis

By His Attorneys.

C. A. Snow & Co.

Witnesses

Jas. K. McLaughlin
C. E. Hays

(No Model.)

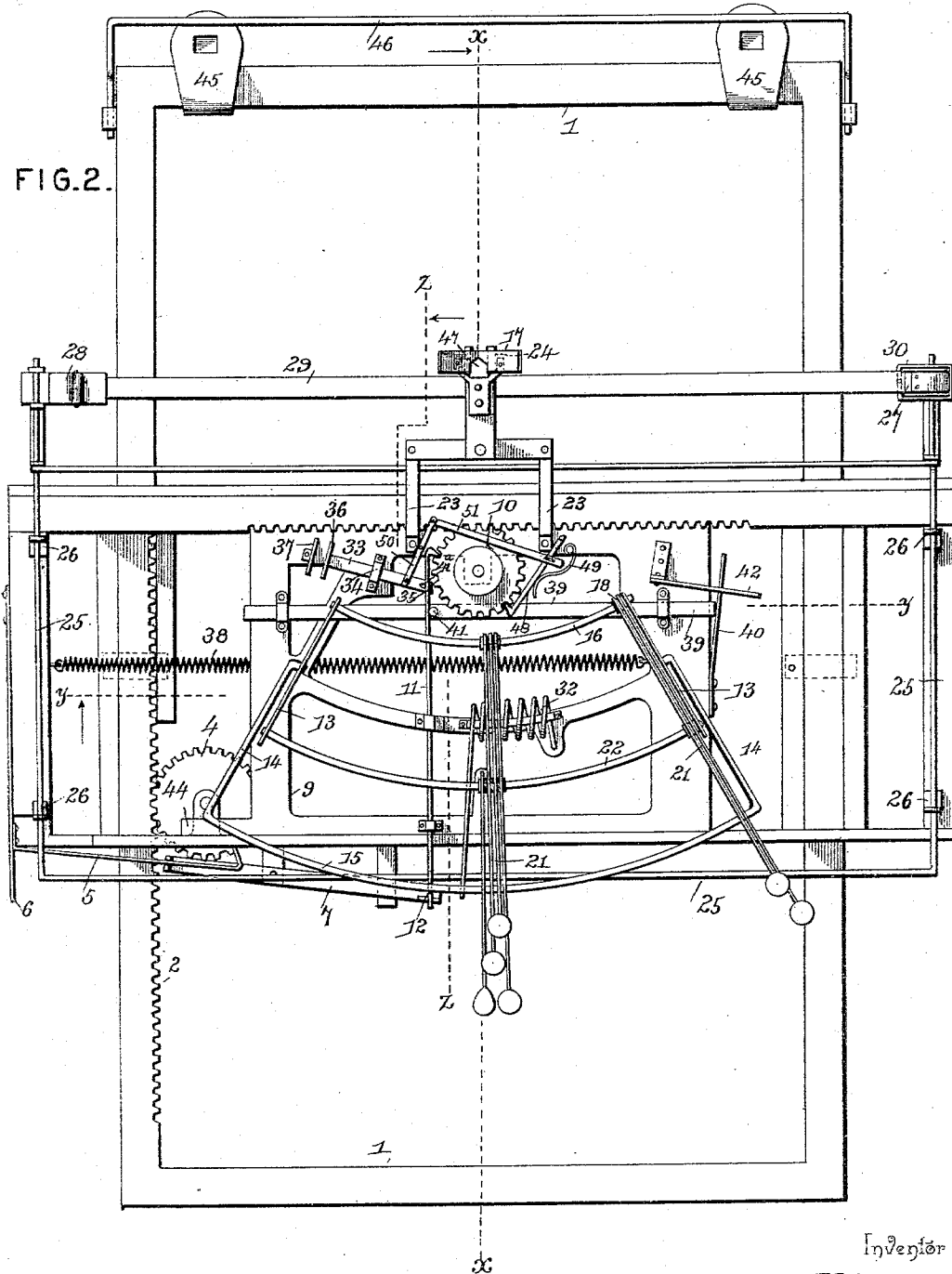
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FIG. 2.



Inventor

Stephen A. Ellis

Witnesses

Jas. H. McLathran
[Signature]

By His Attorneys,

Cashow & Co.

(No Model.)

4 Sheets—Sheet 3.

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FIG. 4.

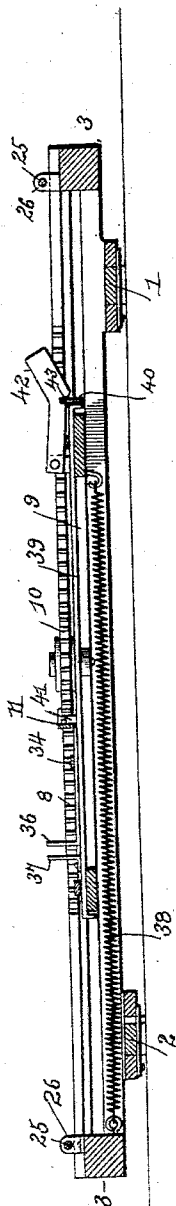
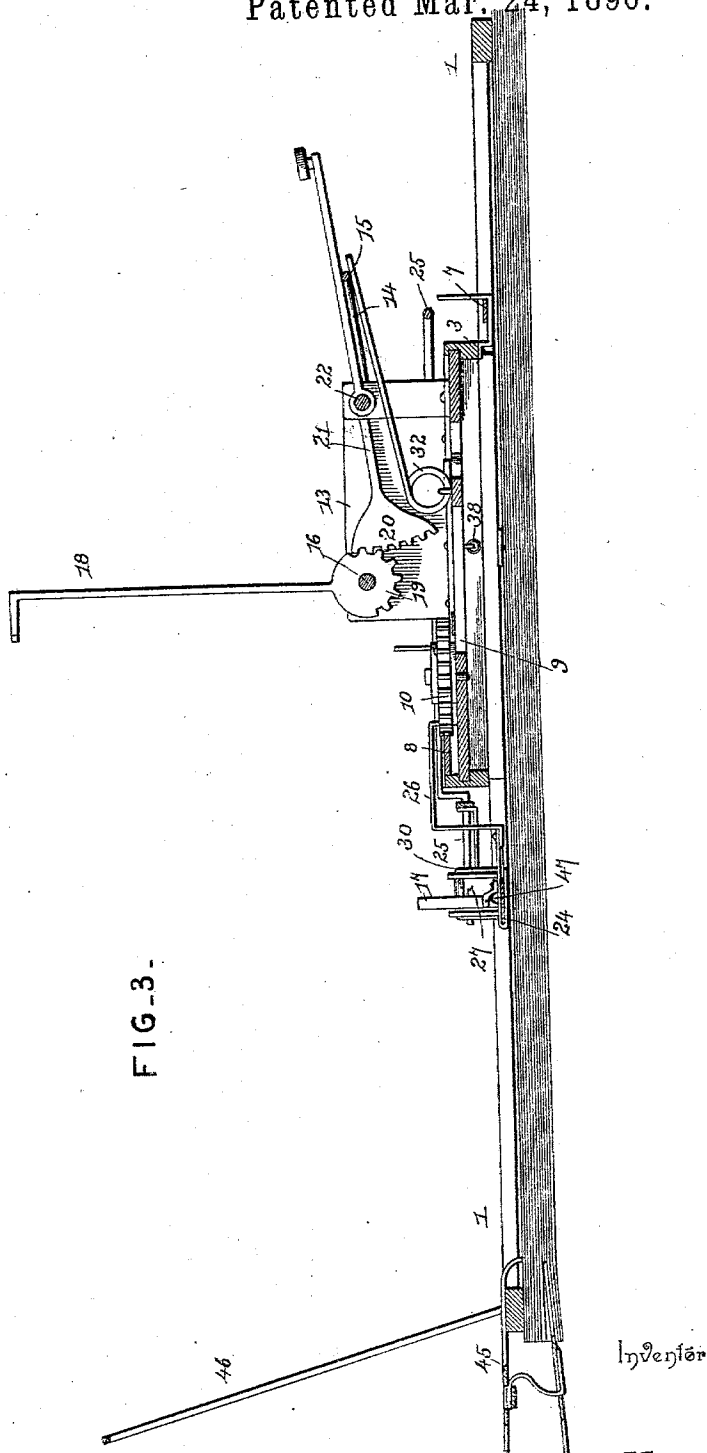


FIG. 3.



Witnesses

Jas. H. McLathran
J. D. Hays

By his Attorneys.

Stephen A. Ellis
C. A. Snow & Co.

Inventor

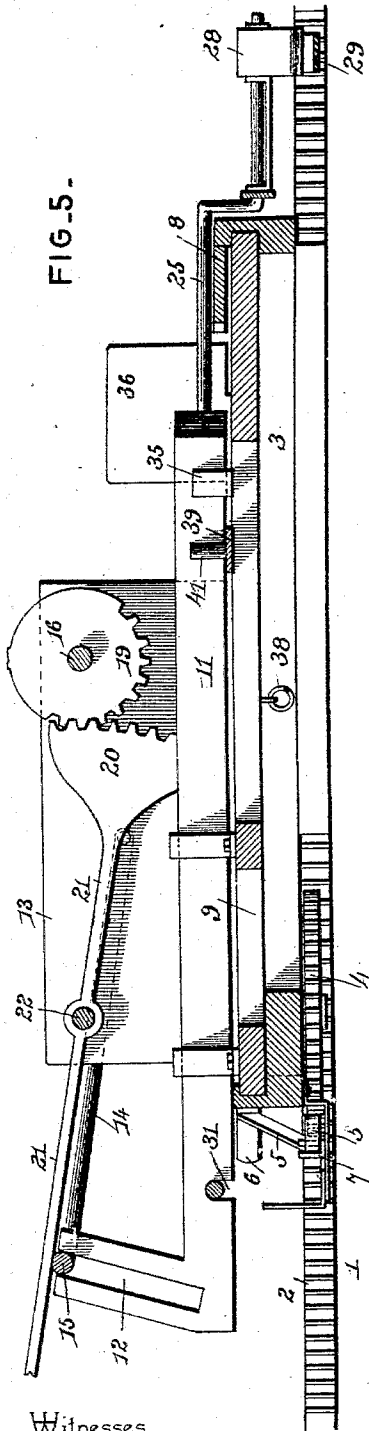
(No Model.)

4 Sheets—Sheet 4.

S. A. ELLIS.
TYPE WRITING MACHINE.

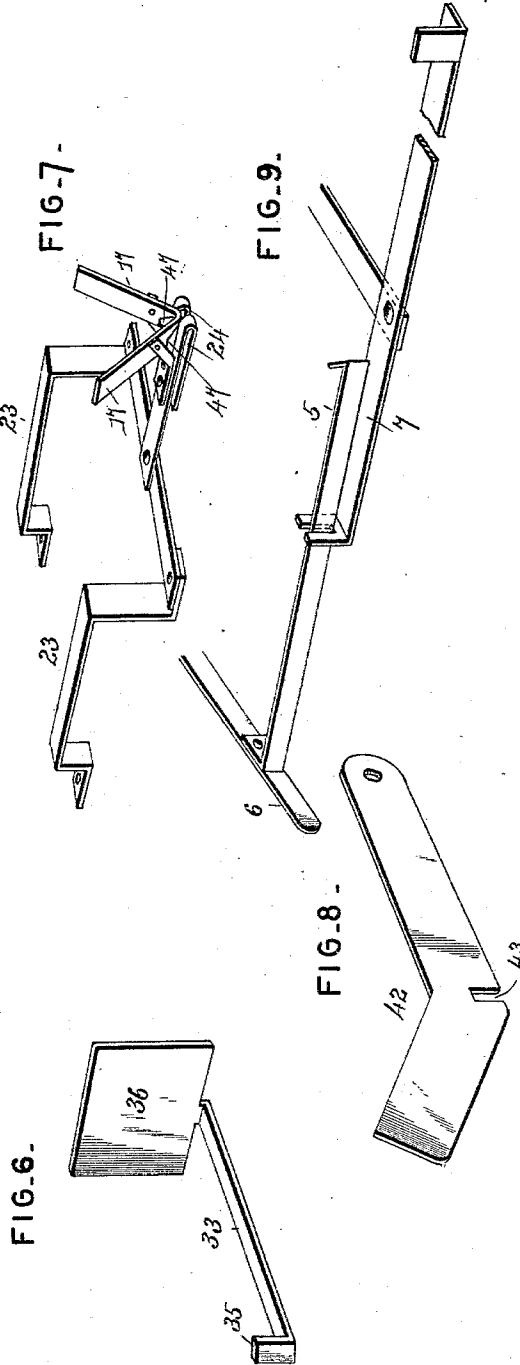
No. 556,812.

Patented Mar. 24, 1896.



Witnesses

Jas. H. McArthur
W. H. Hays



Inventor

Stephen A. Ellis

By *His* Attorneys.

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

STEPHEN A. ELLIS, OF ONEONTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE ELLIS TYPEWRITER COMPANY, OF BIRMINGHAM, ALABAMA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 556,812, dated March 24, 1896.

Application filed August 28, 1894. Serial No. 521,520. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN A. ELLIS, a citizen of the United States, residing at Oneonta, in the county of Blount and State of Alabama, 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 simple, cheap, and efficient machine for writing in record and other books, and also adapted for general work.

Further objects and advantages of the 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 perspective view of a type-writing machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a section on the line *xx* of Fig. 2. Fig. 4 is a section on the line *yy* of Fig. 2. Fig. 5 is a section on the line *zz* of Fig. 2. Fig. 6 is a detail view of a trip-slide for disengaging the feed-pawl from the pinion. Fig. 7 is a similar view of the type-bar guide and ribbon-guide and supporting-brackets. Fig. 8 is a similar view of a gravity-catch for holding the release-spring in its inoperative position. Fig. 9 is a similar view of the release-lever and pawl for operating the line-spacing pinion.

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

1 designates a base-frame, which is adapted to rest upon the page of a book, as shown in Fig. 1, the same being rectangular in construction and having the side rack-bar 2. Mounted upon this base-frame for movement toward and from the operator is the line-spacing frame 3, also rectangular in construction and carrying a pinion 4, which meshes with the rack-bar 2. The line-spacing mechanism, in addition to this pinion and the rack with which it meshes, includes a line-spacing pawl 5, arranged in operative relation with the pinion, a return-spring 6, to which said pawl is attached and which, when deflected, causes the pawl to turn the pinion, and a releasing-

lever 7, engaged with the pawl and adapted, when repressed at its free end, to disengage the pawl from the pinion to allow free forward and rearward adjustment of the line-spacing frame.

The line-spacing frame is provided at its rear side with a feed-rack 8, and mounted in said frame is the carriage 9, having a feed-pinion 10 meshing with the feed-rack. The spring-metal feed-pawl 11, which is arranged in operative relation with said feed-pinion, is mounted for sliding movement transverse to the line of writing, or transverse to the direction of movement of the carriage, and it is provided at its front end with an inclined guide-slot 12. The carriage is provided with brackets 13, which support a bail-shaped spacing-lever 14, arranged with its cross-bar 15 in the guide-slot of the feed-pawl, whereby when the spacing-lever is depressed said cross-bar operates in the guide-slot and moves the feed-pawl forward to engage a succeeding tooth of the feed-pinion.

Fulcrumed upon a pivot-bar 16, which is concentric with the type-bar guide 17, are the type-bars 18, provided with toothed segments 19, and meshing with said toothed segments are the corresponding segments 20 on the extremities of the key-levers 21. The key-levers are fulcrumed upon the fulcrum-bar 22, also concentric with the type-bar guide 17, and are adapted, when depressed, to depress the curved cross-bar 15 of the spacing-lever, this cross-bar being in like manner concentric with the type-bar guide. This type-bar guide is V-shaped in construction and is supported by the brackets 23 projecting rearward from the carriage and extending over the feed-rack, and below and adjacent to the type-bar guide is a horizontal looped ribbon-guide 24.

The ribbon-supporting frame is reciprocally mounted upon the movable frame 3, the side bars 25 being mounted in suitable guides 26. Attached to the rear end of one of the side bars of the ribbon-supporting frame is a spool 27, adapted to contain a ribbon, and attached in like manner to the rear end of the other side bar of the same frame is a spring-actuated clip 28 to engage the end of a ribbon 29. A sufficient length of the ribbon is ex-

posed to extend from the spool to the said clip, and the spool is held from rotation, after its adjustment, by means of a looped holder 30. When the exposed portion of the ribbon becomes worn, said portion is removed and a new length is exposed.

The exposed portion of the ribbon extends through the ribbon-guide 24, and the front cross-bar of the ribbon-supporting frame is engaged in a notch 31 in the lower edge of the feed-pawl, whereby with each depression of a key-lever the ribbon-supporting frame is moved rearwardly to bring the ribbon in position to receive the impact of the type-bar operated by said key-lever. Upon the release of the key-lever the spacing-lever 14 is returned to its initial position by means of a spring 32, thereby moving the ribbon-supporting frame forward and exposing the line of writing at the same time that the carriage is advanced one step.

To provide for the free adjustment of the carriage I employ a releasing-slide 33, mounted in a guide 34 on the carriage and having a stud 35 in engagement with the feed-pawl. This releasing-slide is provided with a finger-hold, (designated as 36,) which is arranged adjacent to a stationary finger-hold 37 on the carriage.

In connection with the carriage I employ a spring 38 for returning said carriage to its initial position, or the position for starting a new line of writing, said spring being gradually extended as the carriage is advanced in the progress of writing a line. A release-slide 39 is mounted upon the carriage parallel with the direction of movement thereof, and bearing against one end thereof is a release-spring 40, adapted to move the slide in a direction contrary to the forward movement of the carriage in writing. The slide is provided with a stud 41, which engages the feed-pawl, and therefore when the release-spring 40 is free it disengages the feed-pawl from the feed-pinion and allows the carriage to be actuated by the spring 38.

A catch 42 is employed to normally hold the release-spring out of engagement with the release-slide, said catch being actuated by gravity in the construction illustrated and being provided with a notch 43 to engage said spring. The free end of the catch is beveled, and the parts are so arranged that the side bar of the movable frame performs the functions of a trip by engaging said beveled surface and disengaging the catch from the release-spring when the carriage has reached the limit of its forward movement, or the end of a line. Thus when the carriage reaches the end of a line the release-slide is moved by its actuating-spring 40 to disengage the feed-pawl from the feed-pinion and allow the carriage to be returned to its initial position by means of the spring 38.

The release-slide projects slightly beyond the end of the carriage and is adapted to strike a fixed stop when the carriage reaches its ini-

tial position, whereby the slide is moved to allow the feed-pawl to engage the pinion and is held in this retracted position by the automatic engagement with the release-spring of the catch provided for that purpose. The carriage is also provided with a projection 44 to strike the supporting-spring of the line-spacing pawl 5 and advance the movable frame the distance necessary for forming the spaces between the lines. The fixed stop above mentioned for engaging the release-slide is formed, in the construction illustrated in the drawings, by the end of the movable frame, and this stop by checking the motion of the carriage regulates the deflection of the supporting-spring of the line-spacing lever and determines the space between adjacent lines of writing.

The means for securing the base-frame to a book, to prevent change of position during operation, consist of spring-clips 45, the under sides of which are flat to fit between leaves of the book, and attached to the base-frame is a copy-rack 46, thus arranged in convenient position.

The type-bar guide 17 comprises upwardly-divergent flat arms, which are cut away at their point of junction to form a guide-opening 47, through which the type-heads strike. In case of deflection of one of the type-heads it comes in contact with the inclined surface of one of the arms and is thereby guided to said guide-opening.

In order to prevent the feed-pinion 10 from turning backward or in a reverse direction during the forward movement of the feed-pawl 11, caused by the depression of a key-lever, I employ a stop-pawl 48, actuated by a spring 49 and connected by means of a rocking lever 50 and a push-rod 51 to the releasing-slide 33, whereby as the slide is moved to disengage the feed-pawl 11 from the teeth of the feed-pinion the stop-pawl 48 is disengaged from the said pinion to allow free movement in either direction of the carriage.

The tooth of the stop-pawl is inclined in the direction of the forward rotation of the feed-pinion, whereby the latter may be turned forward by the feed-pawl without raising or disengaging the stop-pawl, a slotted connection being provided between the stop-pawl and the push-rod 51, but is held from rotation in the opposite direction until the slide 33 is operated. A stud 41^a is arranged on the slide 33 upon the inner side of the feed-pawl to cause the repression of the slide, and hence the actuation of the stop-pawl, when the slide 39 is operated. Therefore when a key-lever is depressed longitudinal motion is communicated to the operating-pawl 11, which, sliding forward over the periphery of the feed-pawl 10, engages the next tooth, and when said key-lever is released the spring which actuates the frame 15 returns the operating or feed pawl to its normal position, and hence moves the feed-pinion through a partial rotation and thereby advances the carriage one step. When

the carriage reaches the limit of its forward movement and the catch 42 is disengaged from the spring 40 the slide 39 is moved to the left to disengage the feed-pawl 11 from the feed-pinion 10. This movement of the feed-pawl is communicated by means of the stud 41^a to the slide 33 and thence through the rocking lever 50 and push-rod 51 to the stop-pawl 48, and the latter is disengaged from the feed-pinion simultaneously with the feed-pawl. When the carriage reaches its initial position under the tension of the spring 38 and the slide 39 is again moved to the position shown in Fig. 2, the feed and stop pawls are again returned to engagement with the feed-pinion and the parts are ready for further operation. It is obvious that the independent movement of the slide 33 to disengage the feed-pawl from engagement with the feed-pinion also disengages the stop-pawl, whereby the carriage is free to be moved by hand in either direction.

The operation of the machine will be understood from the foregoing, and it will be seen that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, I claim—

1. In a type-writing machine, the combination with a stationary frame, of a line-spacing frame mounted on the stationary frame and movable transversely to the line of writing, a pinion on the movable frame meshing with a rack on the stationary frame, a pawl arranged in operative relation with the pinion, a releasing-lever connected to the said pawl, a reciprocatory carriage mounted upon the line-spacing frame and carrying printing mechanism, feeding devices for the carriage, and means carried by the carriage for actuating the said pawl at the limit of its return movement and advancing the line-spacing frame, substantially as specified.

2. The combination with a stationary frame, of a line-spacing frame movable transversely to the line of writing, line-spacing devices including an actuating-pawl, a spring carrying said pawl, a reciprocatory carriage mounted upon the line-spacing frame and carrying printing mechanism, feeding devices for the carriage, and a projection on the carriage for repressing said spring at the limit of its return movement to operate the pawl of the line-spacing devices and advance the line-spacing frame, substantially as specified.

3. The combination with a stationary frame, of a line-spacing frame movable transversely to the line of writing, line-spacing devices including an actuating-pawl, a spring carrying said pawl, a reciprocatory carriage carrying printing mechanism and mounted upon the line-spacing frame, feeding devices for the carriage, a projection on the carriage for repressing said spring at the limit of the return

movement of the carriage, and means for automatically returning the carriage to its initial position, substantially as specified.

4. The combination of a stationary frame, a line-spacing frame movable transversely to the line of writing, line-spacing devices including an actuating-pawl, a stationary rack, and a pinion meshing with the teeth of the rack and engaged by the pawl, a reciprocatory carriage carrying printing mechanism, and mounted upon the line-spacing frame, feeding mechanism for the carriage, a spring for returning the carriage to its initial position, releasing devices for disengaging the feeding mechanism, and means carried by the carriage for actuating the line-spacing devices at the limit of its return movement, substantially as specified.

5. The combination with a stationary frame, of a movable frame, line-spacing devices, a carriage carrying printing mechanism, feed mechanism for the carriage including a pinion meshing with a rack and a pawl arranged in operative relation with the pinion, means for returning the carriage to its initial position, a releasing-slide arranged in operative relation with said pawl, means for actuating said slide at the end of each return movement of the carriage to throw the pawl into engagement with the pinion, a catch for normally holding said slide inoperative, devices for releasing the catch at the limit of the advance movement of the carriage, and means on the carriage for operating the line-spacing devices, substantially as specified.

6. The combination with a stationary frame, a movable frame, line-spacing devices, a carriage carrying printing mechanism, feeding mechanism for the carriage including a pinion meshing with a rack and a pawl engaging the pinion, a slide arranged to engage said pawl, a spring adapted to actuate the slide to disengage the pawl from the pinion, a catch for holding the said spring in its inoperative position, means for disengaging said catch, a spring for actuating the carriage, and a stop for repressing said slide and its actuating-spring and causing the automatic engagement of the catch with the spring, substantially as specified.

7. The combination with a carriage, of printing mechanism including key-levers, a spring-actuated spacing-lever arranged in operative relation with said key-levers, feeding mechanism for the carriage including a pinion meshing with a rack and a slidable pawl engaging said pinion and provided with a cam-slot in engagement with the spacing-lever, substantially as specified.

8. The combination with a carriage, of printing mechanism including key-levers, a spring-actuated spacing-lever arranged in operative relation with said key-levers, feeding mechanism for the carriage including a pinion meshing with a rack and a slidable pawl engaging said pinion and provided with a

cam-slot in engagement with the spacing-lever, and a ribbon-supporting frame connected to the said pawl, substantially as specified.

9. The combination with a carriage, of
5 printing mechanism including key-levers, a spacing-lever arranged in operative relation with the key-levers, feeding mechanism for the carriage operatively connected to the spacing-lever, a ribbon-frame connected to the
10 feeding mechanism and carrying a ribbon-spool and a clip to engage the end of a ribbon,

a ribbon reeled upon the spool and engaged by said clip, and a holder engaging the spool to maintain the same at the desired adjustment, substantially as specified. 15

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

STEPHEN A. ELLIS.

Witnesses:

J. R. McMURRY,

J. A. CRUTCHER.