

(No Model.)

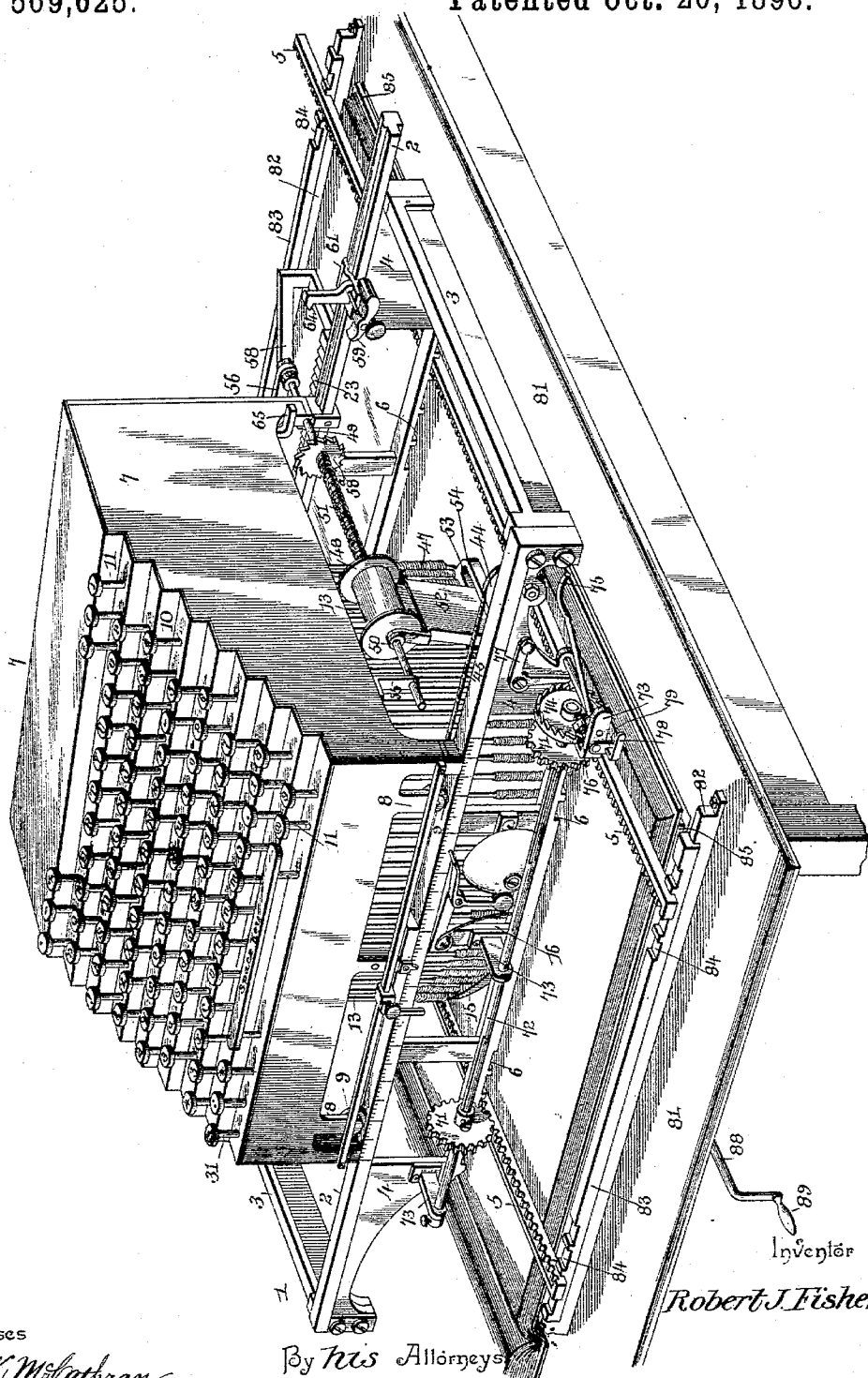
7 Sheets—Sheet 1.

R. J. FISHER.
TYPE WRITING MACHINE.

No. 569,625.

Patented Oct. 20, 1896.

FIG. 1—



Inventor

Robert J. Fisher

By his Attorneys

Witnesses

Jas. H. McLathran

[Signature]

Chas. H. Snow & Co.

(No Model.)

7 Sheets—Sheet 2.

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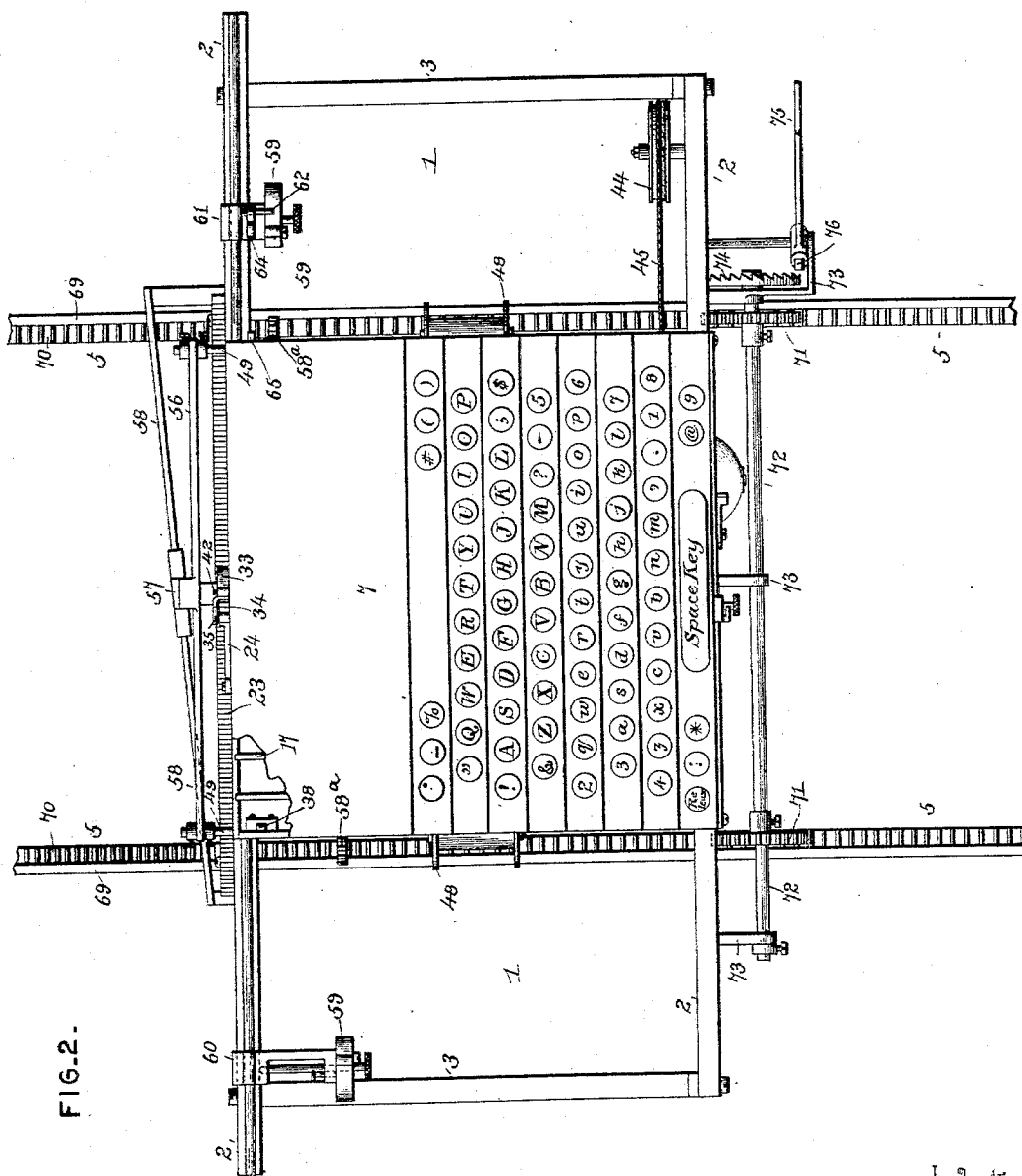


FIG. 2.

Inventor

Robert J. Fisher

Witnesses

Jas. H. McEathran
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By his Attorneys,

Chas. Snow & Co.

(No Model.)

7 Sheets—Sheet 3.

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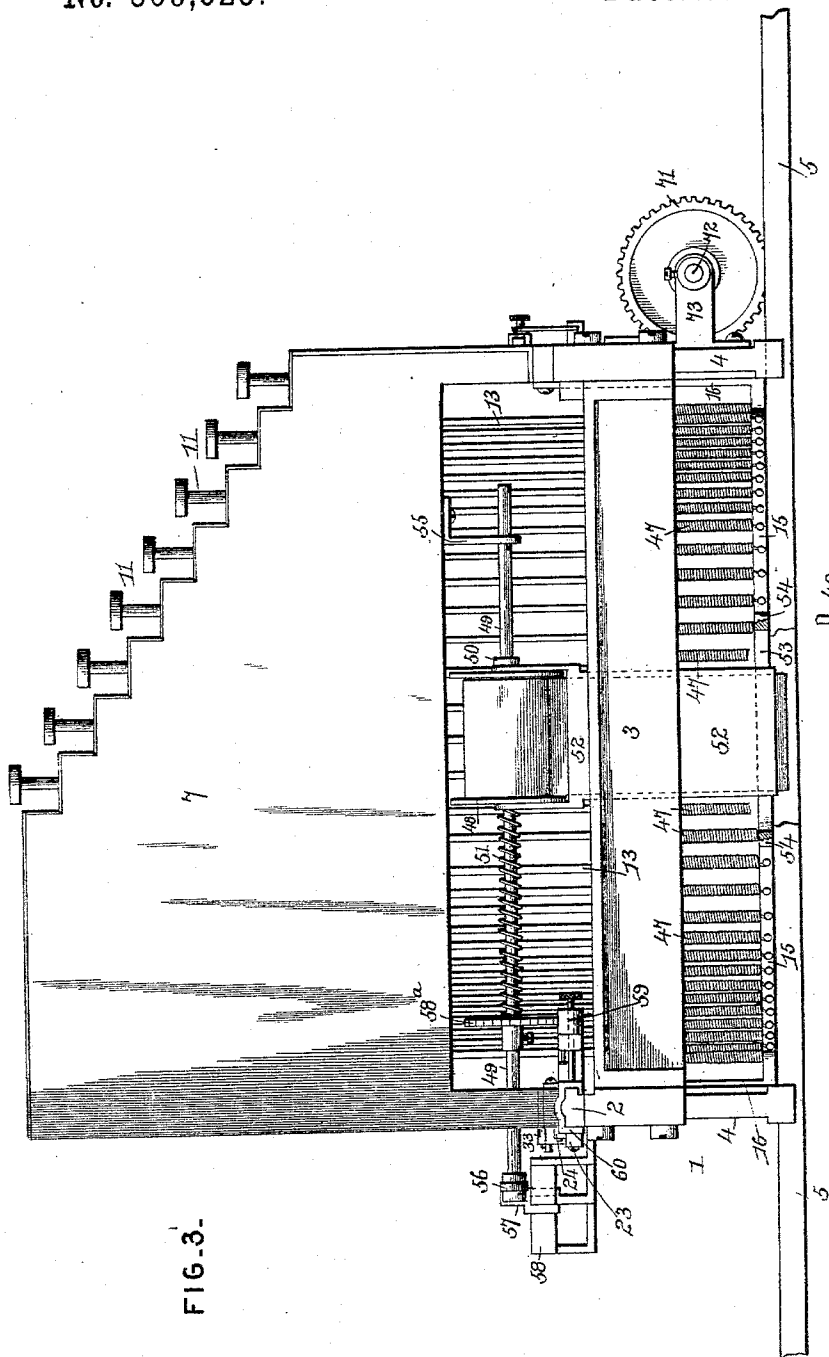


FIG. 3.

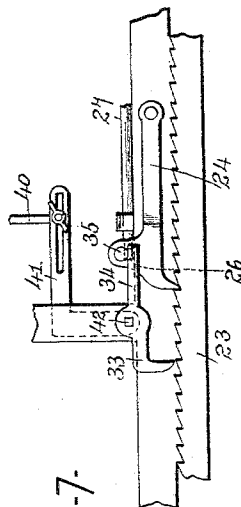


FIG. 7.

Inventor

Robert J. Fisher

Witnesses

Jas. K. McLaughlin
[Signature]

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Cash & Co.

(No Model.)

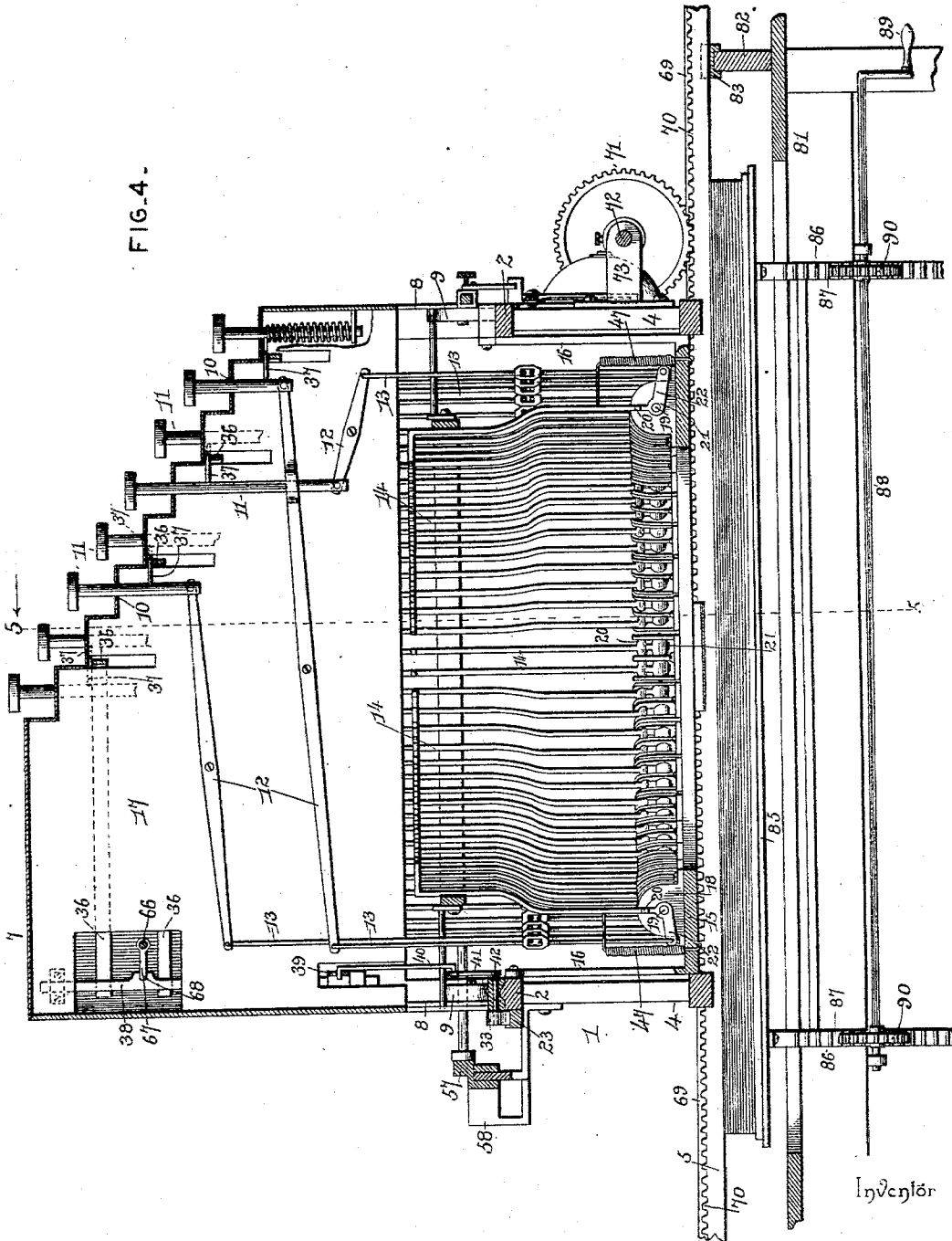
7 Sheets—Sheet 4.

R. J. FISHER.
TYPE WRITING MACHINE.

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Patented Oct. 20, 1896.

FIG. 4.



Witnesses

Jas. H. McArthur
D. B. [unclear]

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Robert J. Fisher

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(No Model.)

7 Sheets—Sheet 5.

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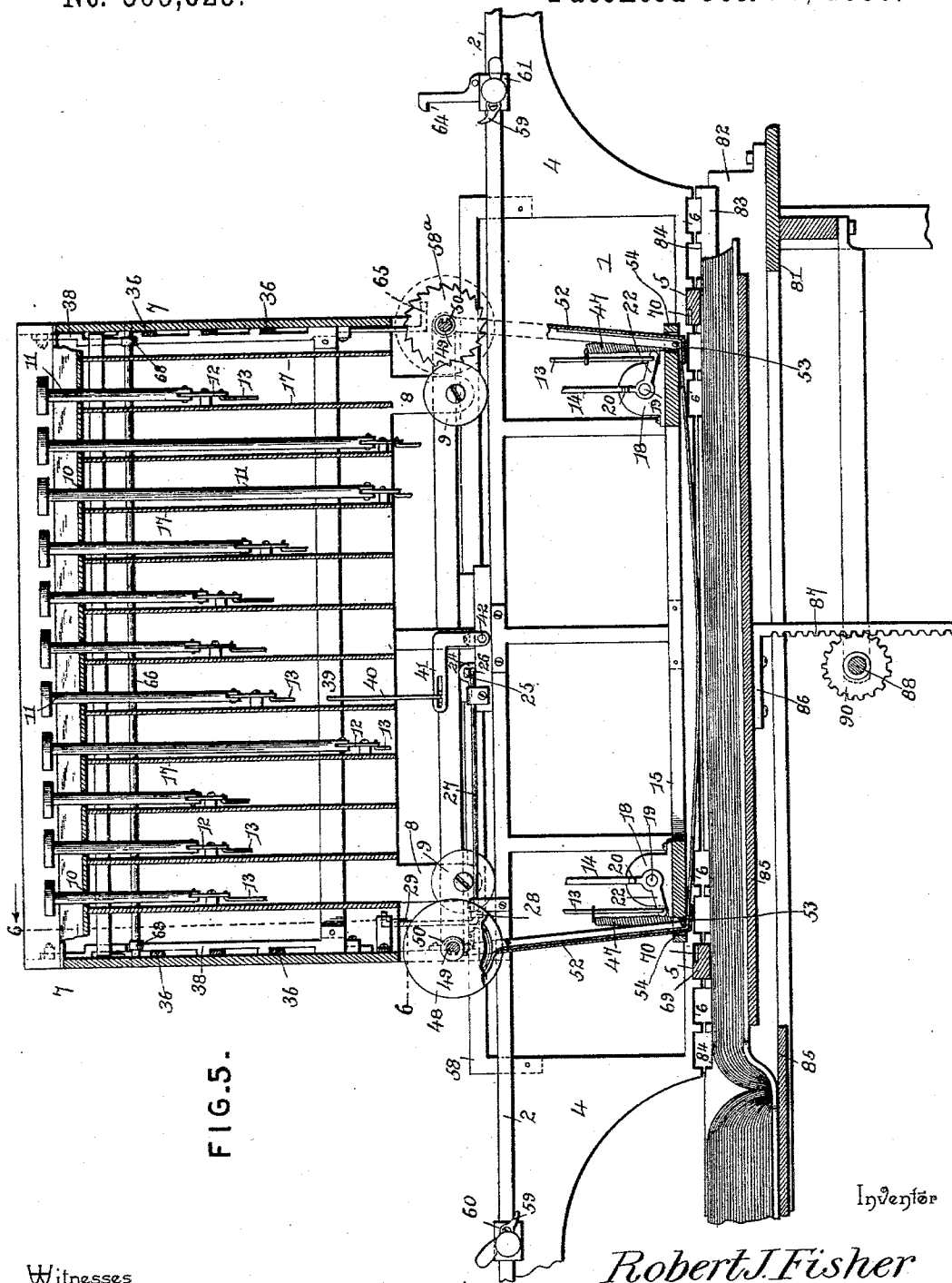


FIG. 5.

Witnesses

Jas. H. McLaughlin
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Robert J. Fisher

Cash & Co.

(No Model.)

7 Sheets—Sheet 6.

R. J. FISHER.
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FIG. 8.

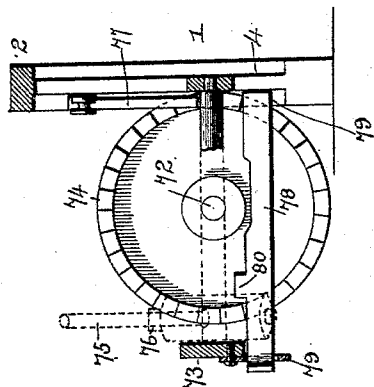


FIG. 9.

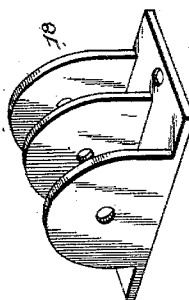


FIG. 6.

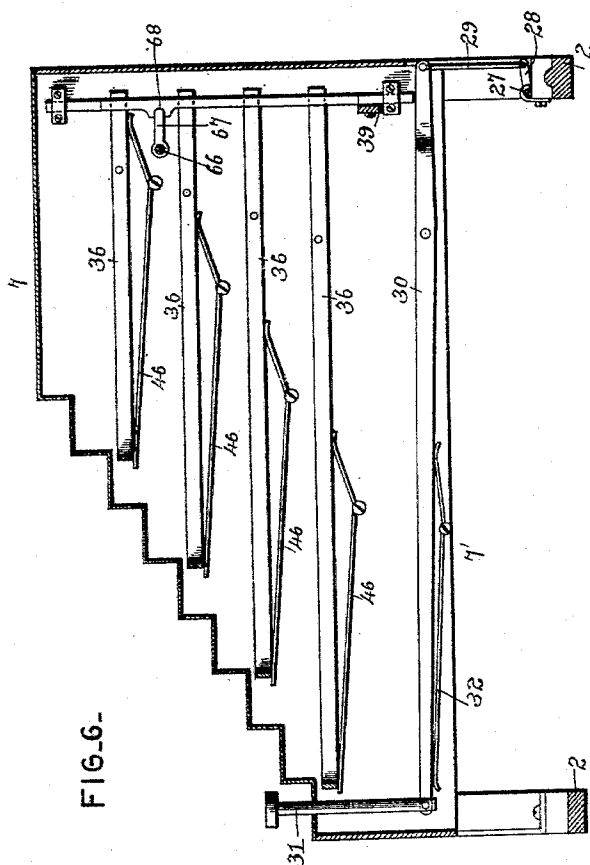
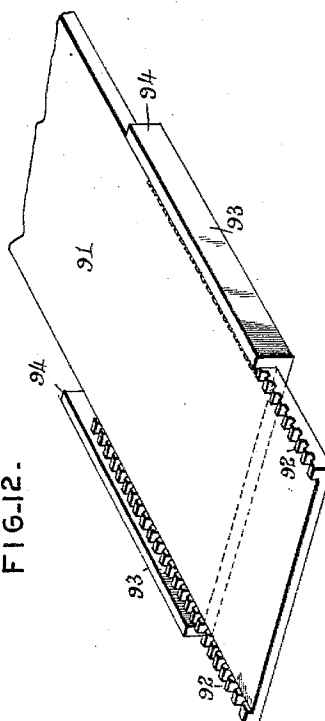


FIG. 12.



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C. A. Snow & Co.

Witnesses

James H. McLaughlin
J. H. McLaughlin

(No Model.)

7 Sheets—Sheet 7.

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TYPE WRITING MACHINE.

No. 569,625.

Patented Oct. 20, 1896.

FIG. 11.

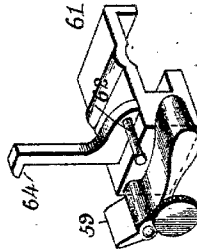
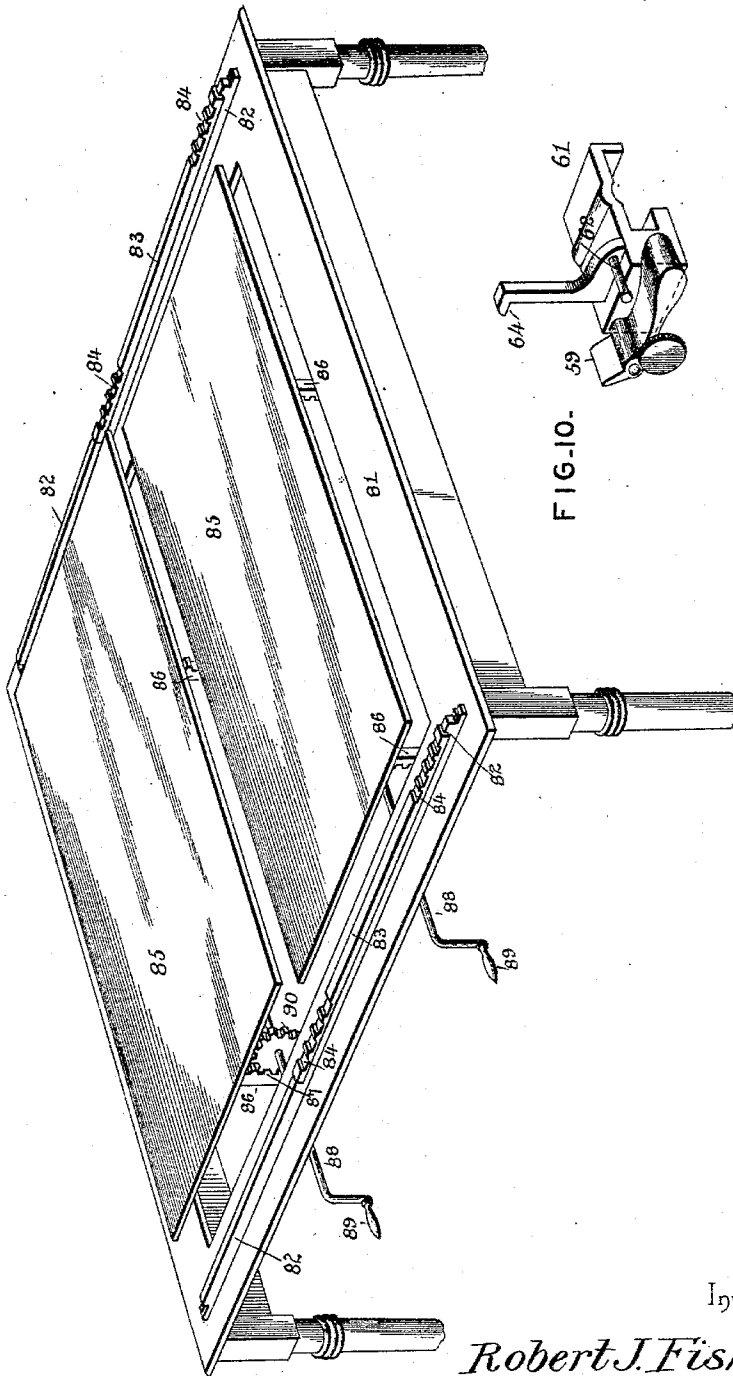


FIG. 10.

Witnesses

Jas. H. McLaughlin
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By *his* Attorneys.

Inventor
Robert J. Fisher

C. Snow & Co.

UNITED STATES PATENT OFFICE.

ROBERT J. FISHER, OF ATHENS, TENNESSEE, ASSIGNOR TO ALICE M. FISHER,
T. STACKPOLE, AND W. M. NIXON, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,625, dated October 20, 1896.

Application filed October 31, 1893. Serial No. 489,634. (No model.) Patented in France December 14, 1894, No. 243,639; in Germany December 15, 1894, No. 85,141, and in England December 17, 1894, No. 24,513.

To all whom it may concern:

Be it known that I, ROBERT J. FISHER, a citizen of the United States, residing at Athens, in the county of McMinn and State of Tennessee, have invented a new and useful Type-Writing Machine, (for which I have received Letters Patent in England December 17, 1894, No. 24,513; in France December 14, 1894, No. 243,639, and in Germany December 15, 1894, No. 85,141,) of which the following is a specification.

My invention relates to a type-writing machine, and has special reference to machines for use in bookwork for forming court, bank, tax-office, and similar records.

The object of my invention is to provide a construction whereby the leaves of the book upon which the record is being formed are held in position to receive the impression by the weight of the machine, and in which the tracks which bear upon the surface of the page are laterally adjustable to suit the size of the book and enable them to be arranged at the margins of the page.

A further object of my invention is to simplify and improve the construction of machines of the class mentioned and provide for easy manipulation of the book.

A further object of my invention is to provide a machine of the class described which may be employed for letter and general writing without the use of auxiliary devices, with the exception of a platen to support the work and receive the impact of the type-bars.

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 perspective view of a type-writing machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a side view. Fig. 4 is a central vertical section. Fig. 5 is a transverse section on the line 5 5 of Fig. 4. Fig. 6 is a longitudinal section on the line 6 6 of Fig. 5. Fig. 7 is a partial rear view, broken away to show the carriage feeding mechanism. Fig. 8 is a detail view of the line-spacing lever and cooperating mechanism. Fig. 9 is a similar

view of a type-bar journal. Fig 10 is a similar view of the adjustable line-stop and key-lock. Fig. 11 is a detail view in perspective of the base and sliding supports for the tracks. Fig. 12 is a similar view of the platen and cooperating parts used in general work.

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

1 designates a substantially rectangular framework having transversely-disposed front and rear carriage-guides 2, which are connected at their terminals by cross-bars 3. The frame is supported by means of pendent scroll frames or standards 4, carried by the front and rear guides, said pendent frames or standards being provided at their lower edges, which rest upon the forwardly and rearwardly extending tracks 5, with means whereby the interval between said tracks may be adjusted to suit the width of the pages of the book. Said means of adjustment consist, in the construction illustrated, of a series of seats 6, which rest upon and engage the tracks and thereby hold the frame and tracks from independent lateral displacement. (See Figs. 1 and 5.)

Mounted upon the transverse carriage-guides is the carriage 7, which supports the keys, type-bars, and operating connections, as well as the auxiliary devices, consisting of ribbon supporting and feeding mechanisms, &c. The carriage consists, essentially, of a casing provided with front and rear pendent supports 8, Fig. 5, upon which are journaled the antifriction-rollers 9, mounted upon the above-mentioned carriage-guides. The keyboard is arranged in steps, as in the ordinary construction, such steps being provided with guide-openings 10, Fig. 4, for the reception of the shanks of keys 11, said shanks being connected, by means of operating-levers 12 and draw-wires 13, to the type-bars 14, which are pivotally mounted upon the pendent supporting-ring 15. Said ring is held in place by means of hangers 16, Fig. 4, which depend from the casing of the carriage, and the levers 12 are pivoted to the parallel partitions 17, Figs. 4 and 5, which are fitted at their front and rear edges in vertical grooves formed in

the inner surfaces of the front and rear plates of the casing, Fig. 2, said partitions being removable vertically from the casing, with the levers and connections carried thereby, to facilitate the construction and assembling of the mechanism and enable injured or displaced parts to be removed or exposed for purposes of repair. The pendent ring, which is arranged in a horizontal plane adjacent to that of the bottom of the supporting-standards 4, is provided with journal-plates 18, Figs. 4 and 9, arranged in pairs and supporting the pivot-pins 19, upon which the type-bars are mounted. These journal-plates are extended a considerable distance upon all sides of the pivot-pins, and the type-bars are provided upon opposite sides with the lateral bearing-lugs 20, Fig. 4, which bear against the facing-surfaces of the journal-plates near their peripheries to give lateral support to the type-bars and prevent vibration and lost motion. The type-bars are further provided with laterally-extended bearings 21, which bear at their terminals against the inner surfaces of the plates.

The operating-levers 12, Fig. 4, are pivoted at points intermediate of their extremities, and preferably at or near their centers, whereby the downward movement which is imparted to one end of a lever by the depression of a key produces an upward movement of the other extremity of the lever, and this upward movement is communicated by means of a draw-wire 13, the length of which is adjustable, to the offset-arm 22 of the type-bar. It will be noted that this communication of motion is simple and direct and does not depend for its accuracy upon the stiffness of the wires 13.

Arranged in rear of and secured to the rear transverse carriage-guide is a rack 23, (see Figs. 2, 4, and 7,) forming one member of the carriage feeding mechanism, and engaging this rack is a stop-dog 24, pivoted to the rear side of the casing and having a forward-extending stud 25, Fig. 5, which is engaged by an arm 26 of the crank-shaft 27, Fig. 6. The arm 28 at the opposite or outer end of this crank-shaft is connected by means of a draw-wire 29 with the rear end of a lever 30; which is connected to and operated by the release-key 31, whereby when said key is depressed the dog is disengaged from the rack to permit of the free movement in either direction of the carriage. A spring 32 is arranged to hold said lever in its normal position with the release-key elevated. In connection with the said dog there is a working pawl 33, having an arm 34, which engages a rearward-extending stud 35 on the free end of the dog. This working pawl is held normally out of engagement with the rack by means of the stop-dog and the said arm 34, of which the latter acts as a counterbalance. The means for operating this feed mechanism to cause the carriage to advance upon the depression of each key consist of a series of pivotal yokes 36, Fig. 6, consisting of parallel side arms connected at

their front ends by an integral cross-bar, which is engaged by pins 37, carried by the key-shanks, Fig. 4. The side arms of these yokes are pivoted to the side plates of the carriage and are connected at their rear extremities, respectively, to the vertically-slidable uprights 38, which in turn are connected at their lower ends by a horizontal connecting-bar 39, Figs. 5 and 6. This bar is connected at an intermediate point by means of a draw-wire 40 with the free end of an arm 41, Fig. 7, which is secured to the spindle 42 of the working pawl, whereby when a key is depressed it depresses the front side of one of the yokes, elevates the slidable uprights, and depresses the toothed extremity of the working pawl, at the same time disengaging the stop-dog from the rack and allowing the carriage to advance a distance equal to the interval between two adjoining teeth of the rack-bar.

The spring-pulley 44, Fig. 2, which is of the ordinary construction, is connected by the cord or strap 45 to the carriage to furnish the power for moving the carriage when the feed mechanism is operated in the manner above described. Springs 46 are arranged in operative relation with the side arms of the yokes to normally hold them with their front sides elevated, Fig. 6, and return-springs 47, Fig. 5, are connected to the draw-wires of the type-bar mechanism to return the type-bars and keys to their elevated positions after depression. The connection of the draw-wire 40 with the arm 41, Figs. 5 and 7, is adjustable to enable the throw of the auxiliary pawl to be regulated.

The ribbon-spools 48, Fig. 3, which are arranged at opposite sides of the carriage, are feathered or fitted to slide without independent rotation upon the spindles 49, and are held in contact with shoulders or equivalent stops 50, formed on said spindles, by means of the coiled springs 51 and the ribbon-guides 52, Fig. 1, which are bifurcated at their upper ends and are fitted slidably upon the spindles, extend downward to the pendent ring and are fitted in slots 53, formed in lateral extensions 54 of said ring. These ribbon-guides carry the ribbon below the lower surface of the pendent ring and maintain it in a horizontal position in the path of the type-heads carried by the type-bars. The spool-spindles are fitted slidably in the guides 55 and extend in rear of the carriage, where they are connected by a transverse bar 56, provided at an intermediate point with an angularly-disposed or inclined traveler 57, Figs. 1, 2, and 4. This traveler operates upon a stationary guideway 58, which is supported by the framework at an inclination to the direction of movement of the carriage. The amount of deflection of this inclined guideway corresponds with the width of the inking-ribbon, and as the carriage is moved by its feed mechanism in forming a line of writing the ribbon-spools are moved trans-

versely to the line of writing. The spool-spindles are provided with ratchet-wheels 58^a, which are arranged in position to be engaged by ribbon-feeding pawls 59, one of which is secured to an adjustable bracket 60 at one end of the framework, and the other of which is carried by the adjustable line-stop 61, said line-stop and bracket being fitted upon the rear transverse carriage-guide. Only one of these ribbon-feeding pawls is employed at one time, inasmuch as they are intended to turn their respective ratchet-wheels in opposite directions to feed the ribbon in opposite directions, and therefore the pawl which is not in use is elevated at its outer end and held in the inoperative position by means of a slidable retaining-pin 62, Fig. 10. The outer ends of these pawls are weighted to hold them in their operative positions when the retaining-pins are disengaged therefrom. The engaging position of the ribbon-feeding pawl is shown at the right in Fig. 5, and the inoperative position is shown at the left in the same figure.

It will be noted that by arranging the right-hand ribbon-feeding pawl upon the adjustable line-stop the ribbon will be fed longitudinally at the end of each line of writing, whether that line be long or short. In addition to the ribbon-feeding pawl the adjustable line-stop carries a key-lock 64, which is provided with a shoulder to engage a lateral projection 65, Fig. 1, carried by the adjacent slidable upright 38, whereby when the carriage reaches the line-stop said projection passes beneath the shoulder of the key-lock and by preventing the upward movement of said upright locks all of the keys and prevents the bunching of characters at the end of a line.

To give the requisite stiffness to the mechanism whereby the movement of the keys is communicated to the feeding mechanism, I preferably employ a rock-shaft 66, Figs. 4, 5, and 6, located transversely in the carriage at the rear thereof and provided at its terminals with rearwardly-extending arms 67, which engage notches 68 in the slidable uprights and communicate the motion of one upright to the other directly and positively. This is of especial advantage when a key near one side of the keyboard is operated, in that there is a liability, due to the flexibility of the yokes, to cause a greater movement of one of the uprights than of the other, and thus produce an irregularity of operation and a possible binding of the parts. This feature of a rock-shaft may, however, be substituted by other equivalent means, or may be dispensed with if the yokes are made sufficiently rigid to communicate motion equally to the two uprights.

The line-spacing mechanism comprises the longitudinal tracks 5, which have the raised smooth portions 69 and the depressed racks 70, and spur-wheels 71, carried by a transverse shaft 72, which is mounted in brackets

73 on the front of the framework. These spur-wheels engage the racks of the longitudinal tracks and are adjustable upon the shaft to suit the interval between said tracks. To one end of the shaft is fixed a ratchet 74, engaged by a spacing-lever 75, having a spring-tooth 76, the latter being adapted to yield when the spacing-lever is swung in a direction opposite to that which is necessary to turn the ratchet forward. A gravity retaining-pawl 77 is arranged to prevent backward rotation of the ratchet-wheel. (See Figs. 1 and 8.) The length of the spaces between the lines or the amount of movement of the framework at each movement of the spacing-lever is regulated by an adjustable gage 78, Fig. 8, which is fitted for movement in suitable guides 79, formed in the adjacent bracket 73, and is provided with an extension or enlargement 80, which, when arranged in the path of the spring-actuated tooth of the spacing-lever, limits the movement of said lever, and hence of the framework, to an extent commonly known as a "single space." When the gage is repressed, the spacing-lever may be moved sufficiently to cause a "double-space" movement of the machine. Thus the upper edge of the gage is stepped or provided with shoulders to limit the lever at different points, according to the position of the gage, and thus vary the extent of movement of the framework at each operation of the lever.

In order to facilitate the adjustment of a book with relation to the mechanism, as above described, and maintain the machine in position when the book is withdrawn for the purpose of turning a leaf, I preferably employ a table 81, Figs. 5 and 11, provided at its front and rear edges with transverse ways 82, upon which are mounted the slidable carriers 83, having seats 84 to agree with the corresponding seats in the base of the framework. The ends of the toothed tracks 5 are fitted in the proper seats of these carriers to suit the width of the book, and the entire mechanism is capable of lateral adjustment by the movement of these carriers upon the supporting-ways. Between said ways are arranged two similar adjustable leaves or traps 85, provided with adjusting devices which may be of any preferred construction, whereby said leaves or traps may be adjusted vertically to cause the page of the book upon which the record is to be made to be pressed firmly against the under surfaces of the longitudinal tracks.

The adjusting mechanism which I have illustrated in the drawings consists, for each leaf or trap, of a bracket 86, having a pendant rack-arm 87, located at each end and engaged by a pinion, the two pinions which are employed for the adjustment of each leaf or trap being carried by a common shaft 88, having a handle 89, whereby when the shaft is rotated both of the said pinions, which are shown at 90, are rotated simultaneously and cause the vertical movement of the

leaf. It will be understood that while in the drawings I have shown this supporting mechanism as part of a table or stand it properly forms the base for the type-writing machine and may be constructed as part of a desk or any other device, as may be found most convenient. The advantage of the means described consists in the fact that the book may be dropped vertically without altering the position of the machine proper to enable a leaf to be turned, and when brought to its operative position that leaf or trap which supports the smaller side of the book, in case the latter is not opened exactly at the center, may be arranged at a greater elevation in order to insure accuracy and uniformity of work.

As above mentioned, the machine may be used also for letter-writing and general work, in which case a flat platen, as shown in Fig. 12, is employed. The platen, which is shown at 91, and may be of hard rubber or similar material, is provided upon its lateral edges with racks 92 and is slidably mounted in a stationary frame 93, having vertical side edges 94, upon which the base of the framework rests. As the line-spacing lever is operated the platen is moved rearwardly instead of the framework moving forwardly, as when the writing is upon a book.

From the above description it will be obvious that the construction and manner of mounting the connections between the keys and the type-bars are simple, and by the use of the parallel partitions which are fitted in the grooves in the front and rear sides of the carriage the connections may be mounted upon the partitions before the latter are adjusted, thus materially facilitating the assembling of the working parts of the machine.

The construction and manner of mounting the ribbon spools and guides enable the ribbon to be moved rearwardly to uncover the line of writing, to permit the operator to view the same without altering the position of the machine, said parts being returned to their operative positions, when released, by the return-springs, which are coiled upon the spool-spindles.

It will be observed from the above description, furthermore, that the construction of the framework and the relative construction of the carriage are such that the bearing of the latter upon the guides is in such a plane as to equalize, approximately, the weight above and below, the keyboard being above and the type-bar-supporting ring being below the plane of the guides, thus insuring the stability and the uniformity and regularity of movement of the carriage upon the guides and preventing binding, vibration, and similar disadvantages. It will be noted that the connection of the carriage-operating spring is in the plane of the guides for the carriage.

In order to prevent binding upon the transverse guides and maintain the weight of the machine over and between the same, I have

arranged the keyboard upon the main portion of the carriage instead of upon a projecting portion of the frame, as in those machines in which the framework is stationary, and the only movable part is the platen-carriage.

By the use of the adjustable bracket 60 and the line-stop 61 I am enabled to regulate the margin at both sides of a page, said bracket performing the function of a stop, and therefore as the spool-spindle-operating pawls are carried, respectively, by said bracket and stop they are set to change or shift the ribbon longitudinally at the end of the line of writing. The advantage in having two adjustable stops for the carriage is that in bookwork it is often necessary to make definite margins at both sides in order that the writing may be arranged between margin-lines which set off a special portion of the page for the running work, while terminal columns are reserved for figures, annotations, &c.

The means, including the inclined guide and traveler, for communicating longitudinal movement to the ribbon-spool spindle, and hence feeding the inking ribbon transversely to the line of writing, are covered in a co-pending application, Serial No. 598,345, filed July 7, 1896.

I have now described a simple and preferred construction of my improved type-writing machine, which embodies the essential features for the attainment of the objects in view, namely, facility and accuracy in bookwork, as well as means for accomplishing the ordinary work for which a type-writer is employed; but it will be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle 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 of a framework having guides for supporting a carriage, loose tracks adapted to be arranged upon and hold in place the page of a book which is to receive the impression of the printing mechanism, front and rear alined seats in the base of the frame to fit upon and traverse the tracks, and line-spacing mechanism for moving the framework upon the tracks, substantially as specified.

2. In a type-writing machine, the combination of a framework provided with front and rear base-bars parallel with the line of writing and having series of alined seats, the lower sides of the seats being open, loose tracks adapted to be arranged upon the sheet or leaf to receive the impression and fitting in said seats, whereby the frame may be placed upon the tracks after the latter have been adjusted upon the page or leaf, and line-spacing mechanism for moving the framework upon the tracks, substantially as specified.

3. The combination of a framework having carriage-guides, parallel tracks supporting said framework, means for adjusting the tracks laterally with relation to the framework, and line-spacing mechanism including a transverse shaft, spur-wheels carried by said shaft and adjustable thereon to agree with the interval between the tracks and adapted to engage racks on said tracks, and means for rotating said shaft, with a carriage and printing mechanism, substantially as specified.

4. The combination of a framework having carriage-guides, tracks supporting said framework, means for adjusting the tracks laterally with relation to the framework, a transverse shaft journaled upon the framework, spur-wheels adjustably secured to the shaft and engaging racks with which the tracks are provided, a ratchet fixed to the shaft, a spacing-lever having a spring-tooth to engage said ratchet, a gravity-pawl to prevent backward rotation of the ratchet, and a sliding gage arranged in the path of the spacing-lever to regulate the throw thereof, with a carriage and printing mechanism, substantially as specified.

5. The combination with a framework having carriage-guides, a carriage mounted thereon, carriage feeding mechanism, type-bars, keys, and operating connections, of ribbon-spools, spindles carrying said spools, means for imparting longitudinal movement to the spindles, a line-stop arranged in the path of the carriage, and a pawl carried by said line-stop to engage a ratchet on one of said spindles, substantially as specified.

6. The combination with a framework having carriage-guides, a carriage mounted thereon, carriage feeding mechanism, type-bars, keys, and operating connections, of ribbon-spools, a line-stop arranged in the path of the carriage, and a pawl adjustable to agree with the position of the line-stop and adapted to engage a ratchet on the spindle of one of the spools, substantially as specified.

7. The combination with carriage-guides, a carriage mounted thereon, and feeding mechanism for the carriage, of type-bars mounted upon a pendent supporting-ring, keys, partitions removably fitted in the carriage, and operating connections between the keys and the type-bars carried respectively by said partitions, whereby the operating connections may be removed independently by the removal of the partitions, substantially as specified.

8. The combination with carriage-guides, a carriage mounted thereon, and feeding mechanism for the carriage, of type-bars, keys, operating connections between the type-bars and keys, slidable uprights, pivotal yokes connected to the said uprights, and having cross-bars arranged between contiguous rows of keys, and connected thereto, and means for communicating the motion of the up-

rights to the carriage feeding mechanism, substantially as specified.

9. The combination with carriage-guides, a carriage mounted thereon, feeding mechanism for the carriage, type-bars, keys, and operating connections between the keys and type-bars, of pivotal yokes having cross-bars arranged between contiguous rows of keys, pins carried by the key-shanks to engage said cross-bars, slidable uprights connected to the side arms of said yokes, and means for communicating the motion of the uprights to the carriage feeding mechanism, substantially as specified.

10. The combination with carriage-guides, a carriage mounted thereon, feeding mechanism for the carriage, type-bars, keys, and operating connections between the keys and type-bars, of pivotal yokes having cross-bars arranged between contiguous rows of keys and adapted to be engaged by lateral pins carried by the key-shanks, slidable uprights connected to the side arms of said yokes, operating connections between the uprights and the carriage feeding mechanism, and a rock-shaft journaled in the carriage and having arms engaging said uprights to insure uniformity of movement thereof, substantially as specified.

11. The combination with carriage-guides, a carriage mounted thereon, carriage feeding mechanism, type-bars, keys, and operating connections between the keys and type-bars, of uprights slidably mounted upon the carriage and operatively connected to the carriage feeding mechanism, means for communicating the movement of the keys to said uprights, and a key-lock adapted to engage one of said uprights, substantially as specified.

12. The combination with carriage-guides, a carriage mounted thereon, carriage feeding mechanism, type-bars, keys, and operating connections between the keys and type-bars, of uprights slidably mounted upon the carriage and operatively connected to the carriage feeding mechanism, means for communicating the movement of the keys to said uprights, an adjustable line-stop arranged in the path of the carriage, and a key-lock carried by said adjustable stop and adapted to engage a projection upon one of said uprights, substantially as specified.

13. The combination with carriage-guides, a carriage mounted thereon, carriage feeding mechanism, type-bars, keys, and operating connections between the keys and type-bars, of ribbon-spools, slidable spindles carrying said spools, means for moving said spindles longitudinally as the carriage is fed laterally to cause a lateral feed of the ribbon, slidable uprights mounted upon the carriage and operatively connected to the carriage feeding mechanism, operating connections between the keys and said uprights, and an adjustable line-stop arranged in the path of the carriage and carrying a pawl to engage a ratchet upon one of the spool-spindles to feed the rib-

bon longitudinally, and a key-lock to engage a projection upon one of the uprights, substantially as specified.

14. The combination with carriage-guides, 5 a carriage mounted thereon, carriage feeding mechanism, keys, and operating connections between the keys and said feeding mechanism, of a pendent type-bar-supporting ring provided with lateral slotted extensions, type- 10 bars mounted upon said ring and operatively connected to the keys, ribbon-guides mounted for longitudinal movement in said slots, rib-

bon-spool spindles supporting the upper ends of said guides, spools feathered upon said spindles, return-springs, and means for feed- 15 ing the spools longitudinally and transversely, 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.

ROBT. J. FISHER.

Witnesses:

E. G. SIGGERS,

E. E. DOYLE.