

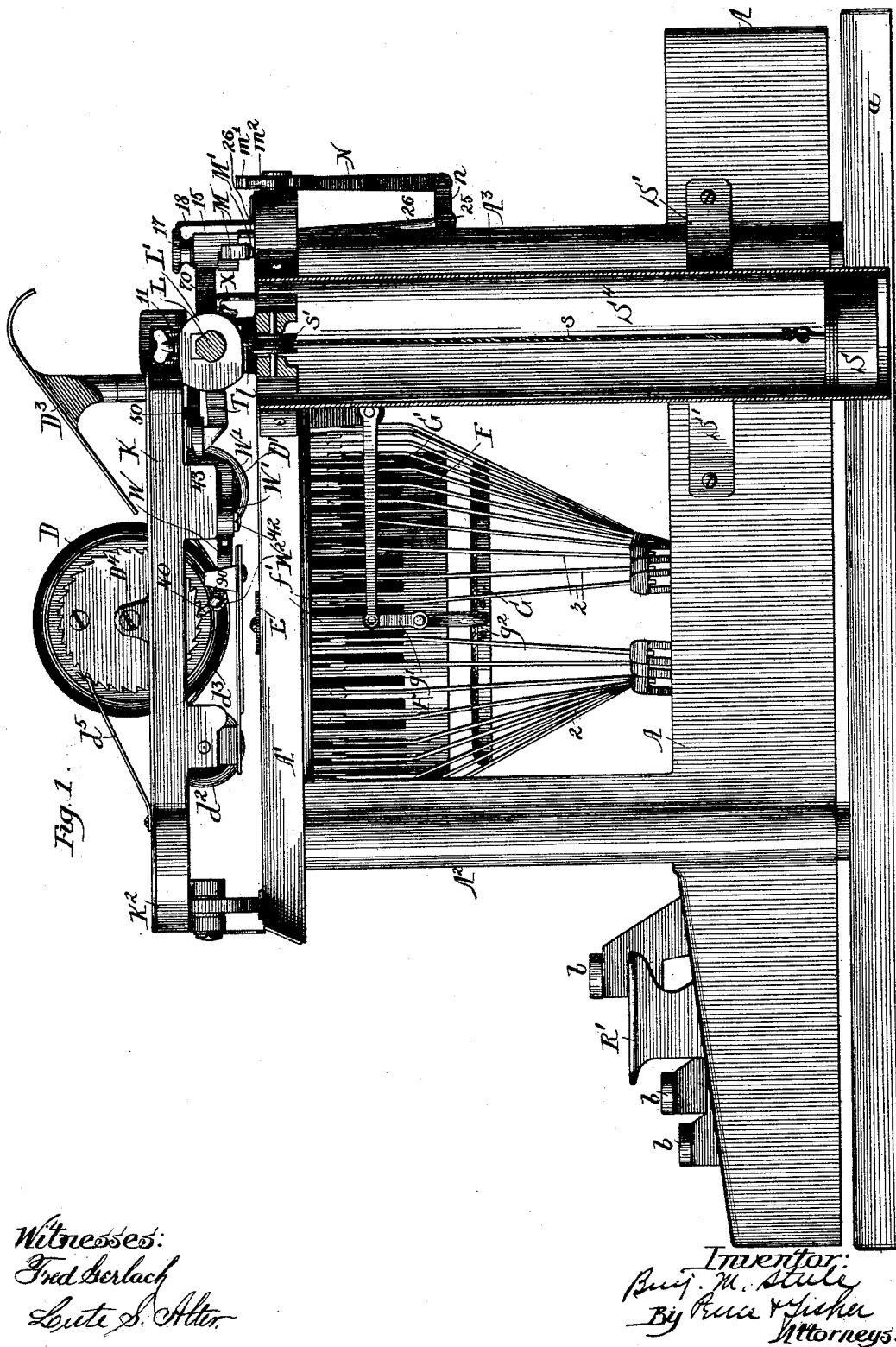
(No Model.)

7 Sheets—Sheet 1.

B. M. STEELE.
TYPE WRITING MACHINE.

No. 459,149.

Patented Sept. 8, 1891.



Witnesses:
Fred Berlach
Leute S. Alter

Inventor:
B. M. Steele
By R. W. Fisher
Attorneys.

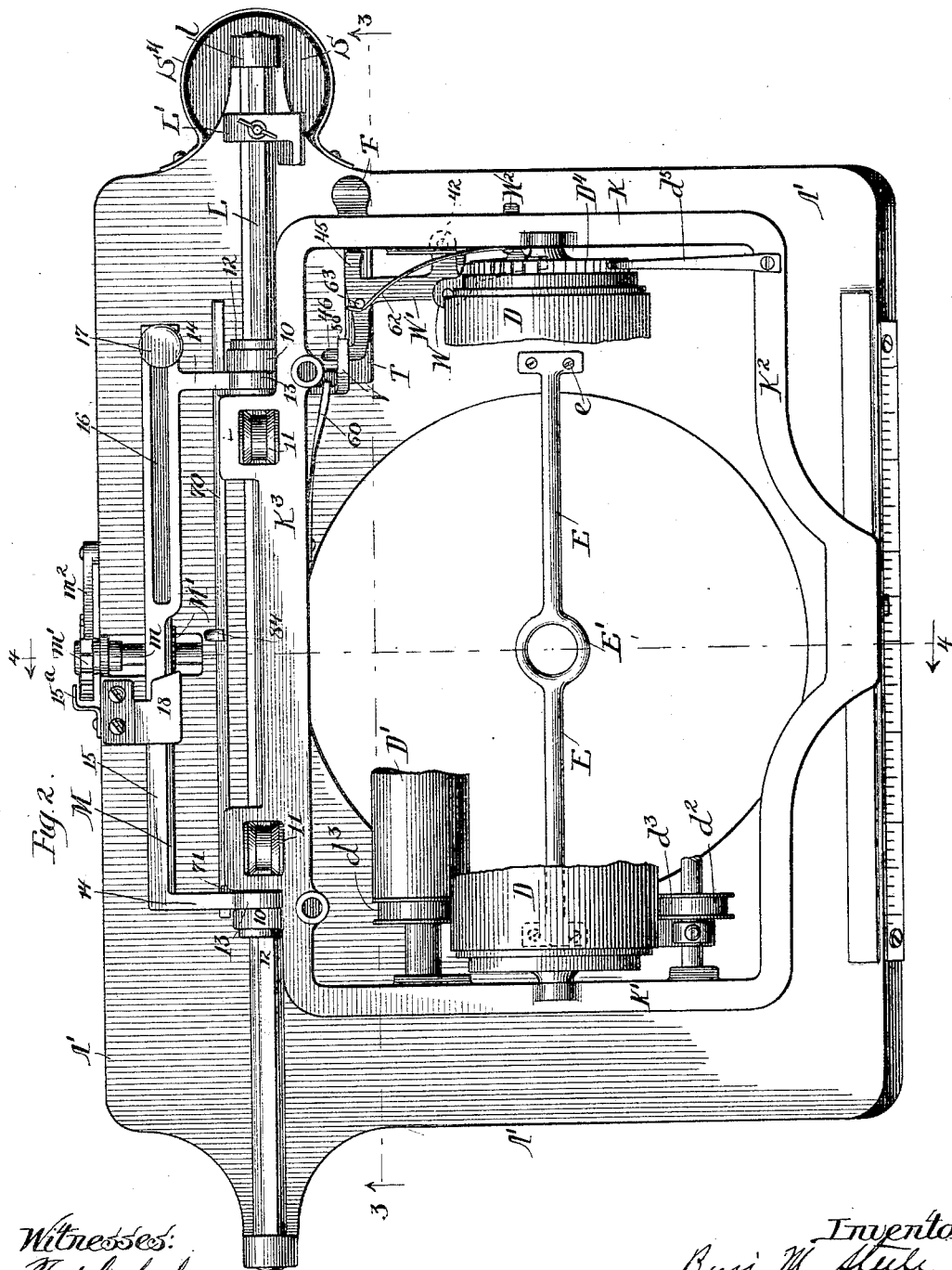
(No Model.)

7 Sheets—Sheet 2.

B. M. STEELE.
TYPE WRITING MACHINE.

No. 459,149.

Patented Sept. 8, 1891.



Witnesses:
Fred Gerlach
Lute S. Alter

Inventor:
B. M. Steele
By *Prin & Fisher*
Attorneys

(No Model.)

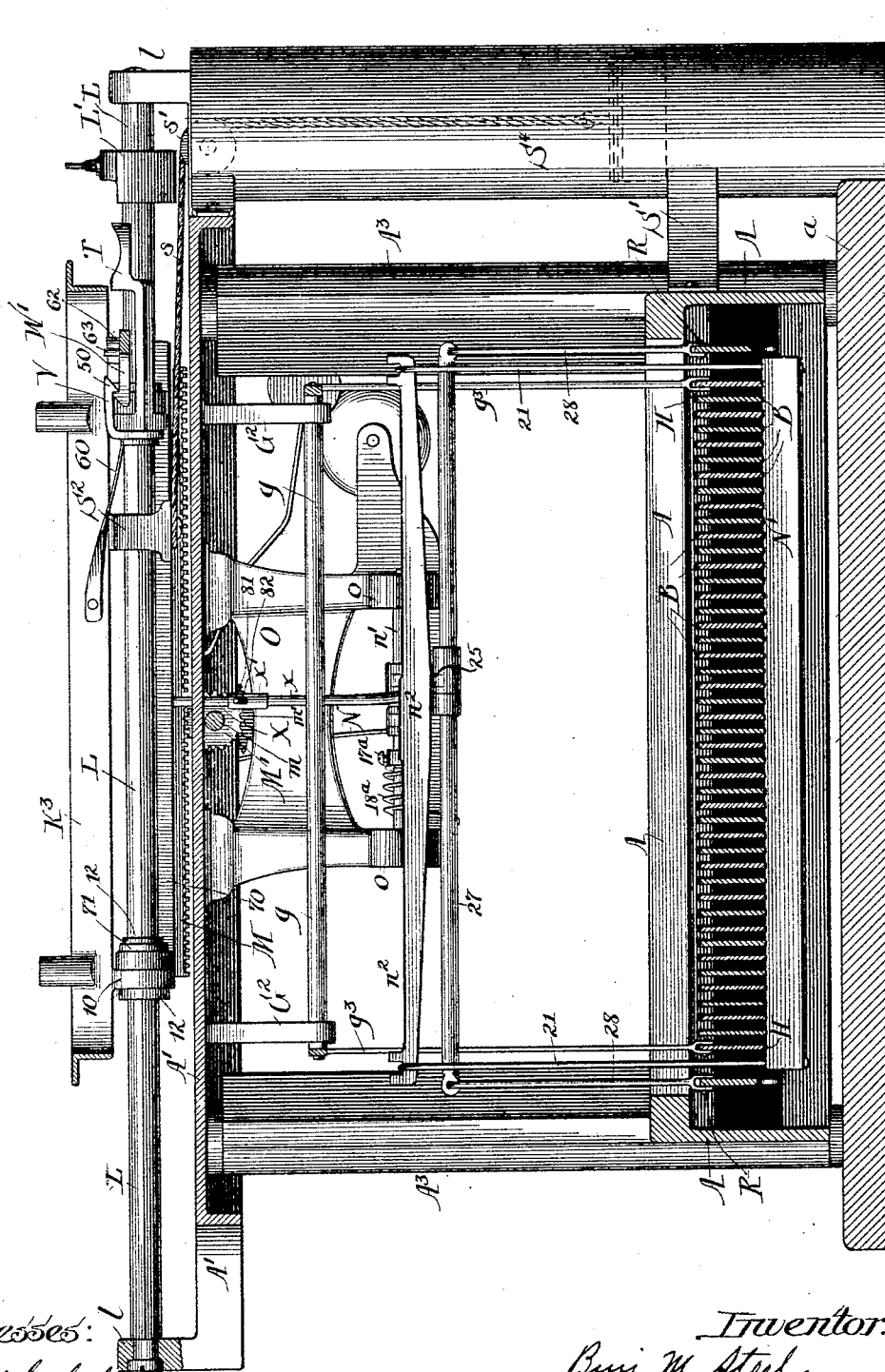
7 Sheets—Sheet 3.

B. M. STEELE.
TYPE WRITING MACHINE.

No. 459,149.

Patented Sept. 8, 1891.

Fig. 3.



Witnesses:
Fred Berlach
Lute S. Alter

Inventor:
Benj. M. Steele
By *Prin. Fisher*
Attorneys.

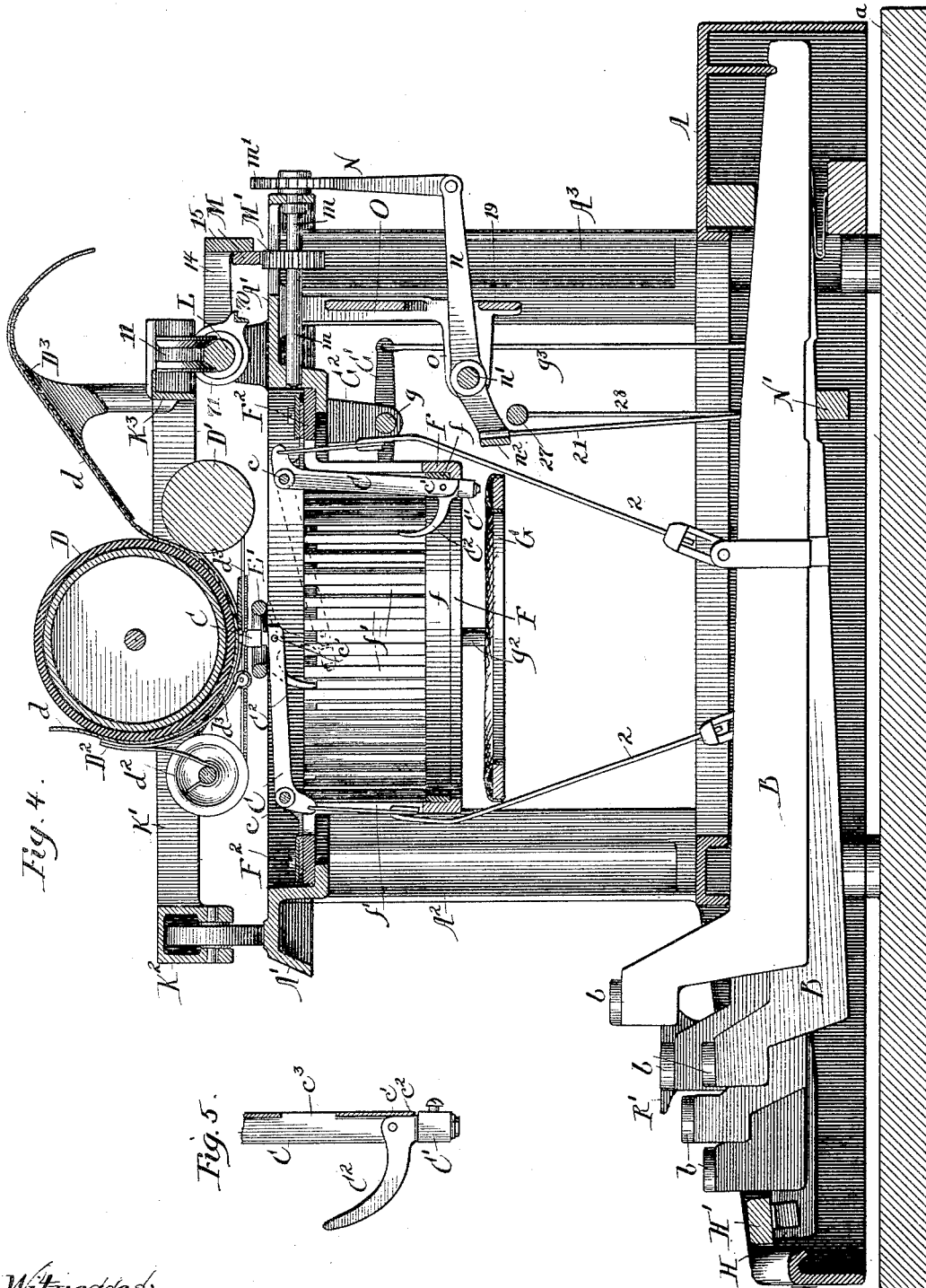
(No Model.)

7 Sheets—Sheet 4.

B. M. STEELE.
TYPE WRITING MACHINE.

No. 459,149.

Patented Sept. 8, 1891.



Witnesses:
Fred Gerlach
Lute S. Alter

Inventor:
 Aug: M. Steele
 By Price & Fisher
 Attorneys

B. M. STEELE.
TYPE WRITING MACHINE.

No. 459,149.

Patented Sept. 8, 1891.

Fig. 6.

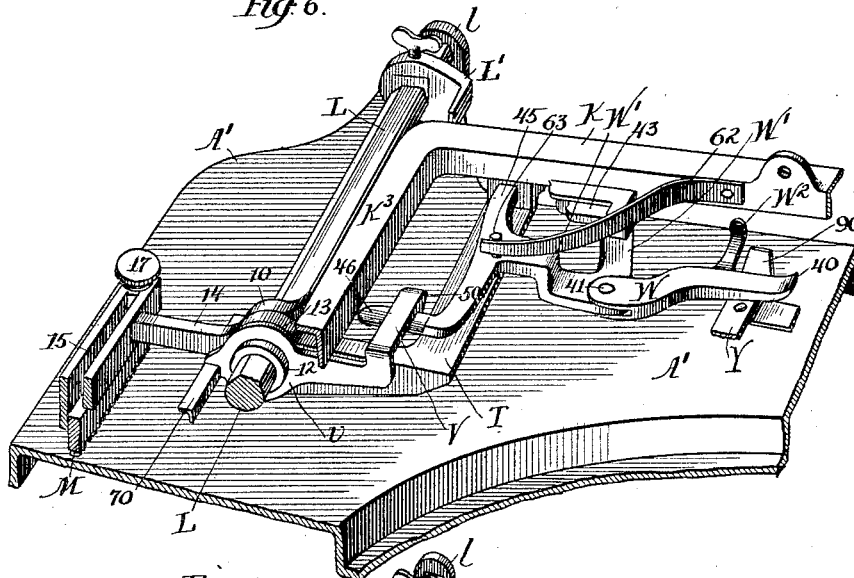


Fig. 7.

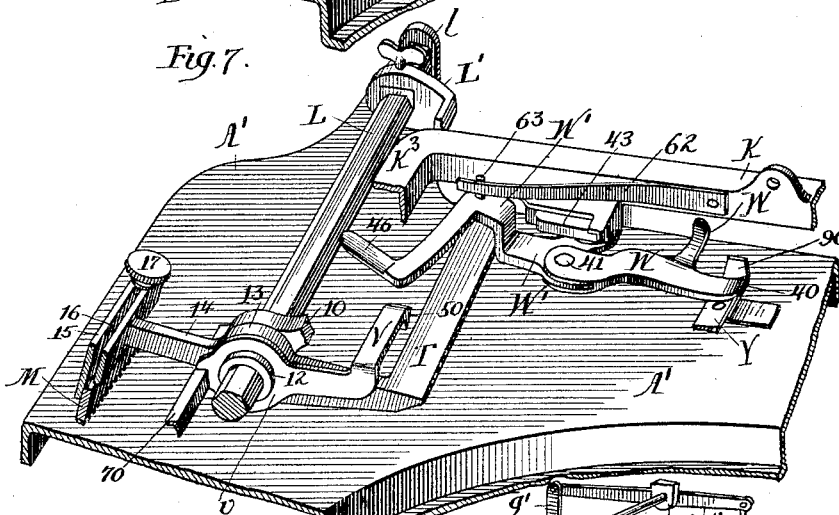
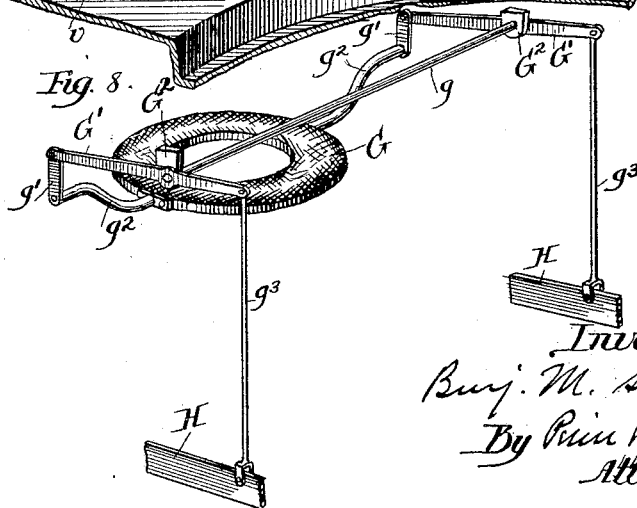


Fig. 8.



Witnesses:
Fred S. Lach
Lute S. Alter

Inventor:
Burr M. Steele
By R. M. Fisher
Attorneys

B. M. STEELE.
TYPE WRITING MACHINE.

No. 459,149.

Patented Sept. 8, 1891.

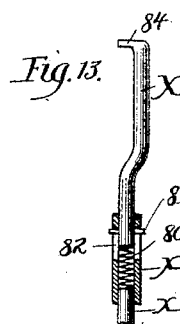
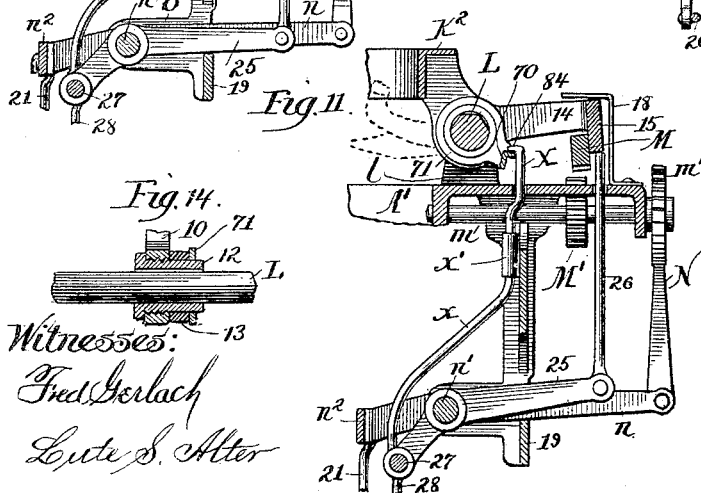
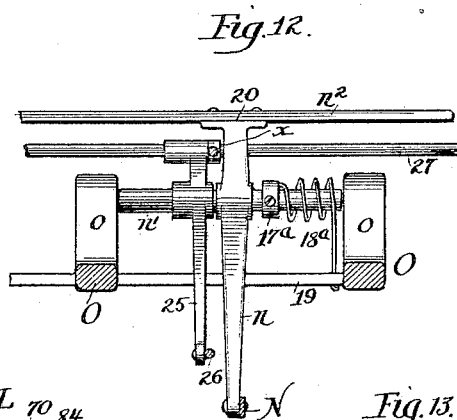
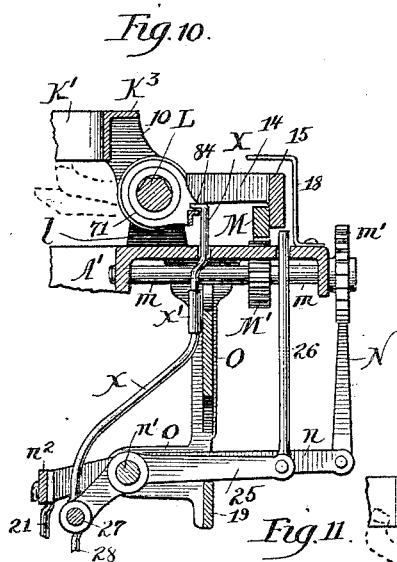
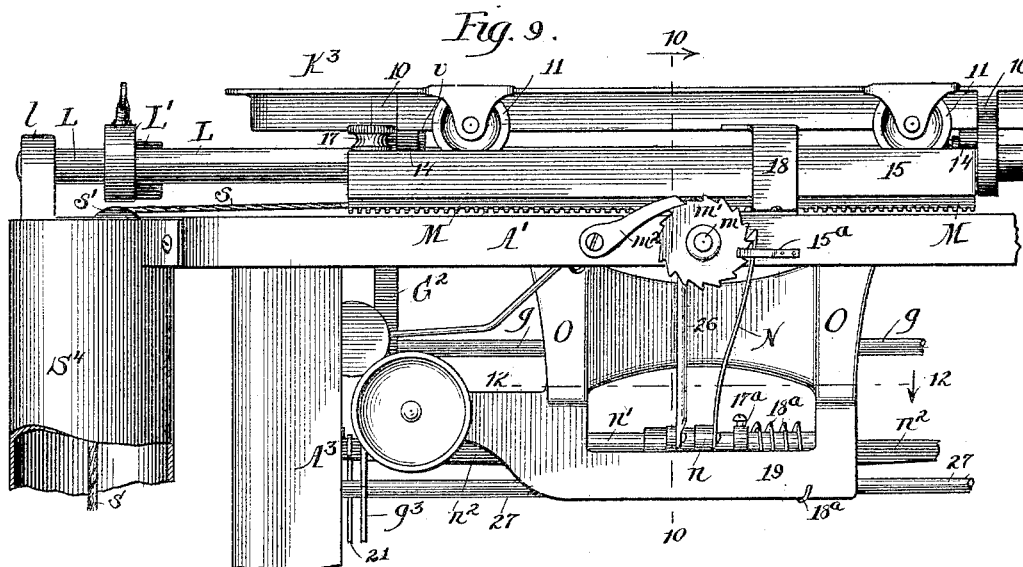


Fig. 14.

Witnesses:
Fred Gerlach
Leute S. Alter

Inventor:
B. M. Steele
By B. M. Fisher
Attorneys

B. M. STEELE.
TYPE WRITING MACHINE.

No. 459,149.

Patented Sept. 8, 1891.

Fig. 15.

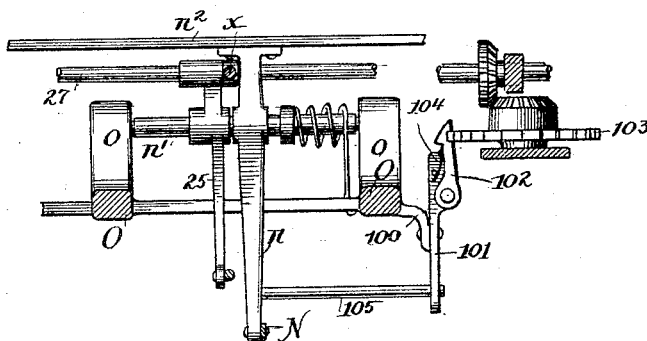
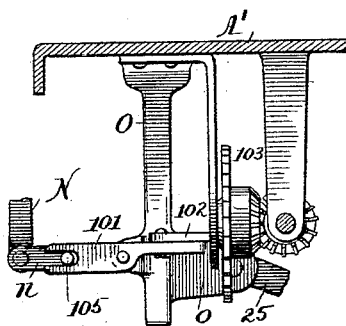


Fig. 16.



Witnesses:
Fred Gerlach
L. A. S. Alter

Inventor:
B. M. Steele
By R. M. Fisher
Attorneys

UNITED STATES PATENT OFFICE.

BENJAMIN M. STEELE, OF PEORIA, ILLINOIS, ASSIGNOR OF ONE-HALF TO
FRED. E. WAY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,149, dated September 8, 1891.

Application filed November 11, 1890. Serial No. 371,046. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN M. STEELE, a citizen of the United States, residing at Peoria, in the county of Peoria, State of Illinois, have
5 invented certain new and useful Improvements in Type-Writing Machines, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of
10 this specification.

The present invention has more particularly for its objects, first, to provide an improved construction of feed mechanism whereby the necessary movements of the paper to
15 be printed can be effected, and, second, to provide improved mechanism whereby the inking of the type shall be effected. These objects of invention I have accomplished by the novel mechanism hereinafter described, illustrated in the accompanying drawings, and
20 particularly defined in the claims at the end of this specification.

Figure 1 is a view in side elevation of a type-writing machine having my invention
25 applied thereto, parts being shown in vertical section. Fig. 2 is a plan view, parts being broken away for the purpose of better illustration. Fig. 3 is a view in vertical transverse section on line 3 3 of Fig. 2. Fig. 4 is
30 a view in vertical longitudinal section on line 4 4 of Fig. 2. Fig. 5 is an enlarged detail, partly in side elevation and partly in section, of a portion of one of my improved type-bars. Fig. 6 is a perspective view showing more particularly the mechanism whereby the line-
35 feed of the paper-carrying roll is to be effected. Fig. 7 is a view similar to Fig. 6, but showing the parts in different positions. Fig. 8 is a perspective view of the ink-pad and its connections. Fig. 9 is a view in rear elevation of
40 a portion of the machine. Fig. 10 is a view in section on line 10 10 of Fig. 9, looking in the direction of the arrow. Fig. 11 is a view similar to Fig. 10, but showing certain of the
45 parts in different positions. Fig. 12 is a view in horizontal section on line 12 12 of Fig. 9, looking in the direction of the arrow. Fig. 13 is a detail view, partly in side elevation and partly in vertical section, through the releasing-rod, whereby certain of the parts that
50 control the line-feed are disengaged. Fig. 14

is a detail view in vertical section through one of the carriage-bearings and the back rod of the machine. Fig. 15 is a view similar to Fig. 12, but showing attachments whereby the
55 feed mechanism may be caused to operate the usual feed of an inking-ribbon. Fig. 16 is an end view of the construction shown in Fig. 15.

For convenience of description the improved construction of type-holders and mechanism for inking the type will be first set forth.

A designates the base portion of the main frame of the machine resting upon a suitable base-board *a*.

A' denotes the top plate of the machine, 65 and A² and A³ denote, respectively, the front and back standards, whereby the top and base portions of the frame are connected together.

The frame of the machine before described is substantially that of an ordinary "Remington" machine; but this frame may be varied in a variety of ways, according to the character of the machines upon which my improvements are applied.

My invention is shown in the accompanying
75 drawings, as applied to a machine having key-levers similar in character to the Remington or "Caligraph" machines, whereby the operation of the type-bars C is effected. These key-levers B are pivoted at the rear of
80 the machine in manner well understood in the art, their forward ends being provided with finger-plates or keys *b* designating the character or characters that will be printed by the operation of any individual key-lever of the machine.
85 Each of the key-levers B is connected by a rod 2, of usual construction, with the short angular end of the type-bar C, this bar being pivoted, as at *c*, in suitable bearings or brackets, and the bearings or brackets as well understood, of the various type-bars being arranged in circular form, so that the bars shall
90 present their types in printing at a common center.

In the accompanying drawings I have illustrated only two type-bars, but it will be understood that these bars will be employed in any desired number and will be provided with any suitable character of types.

Each of the type-bars C has pivoted to its
100 free end, as at *c'*, a shifting type-holder C', and by preference the body of the type-bar C

is formed with the sides between which the holder C' is pivoted, and with a back c^2 , that serves to connect the sides, and serves also by contact with the holder C' to limit the movement of this type-holder. (See Fig. 5.) The normal position of the type-holders C' is that in which the type are presented with their faces downward in position to be inked, as will presently appear; but each of the type-holders is provided with means whereby the holder will be shifted when the type-bar is operated so as to present the face of the type in proper position to make its impression upon the paper d , that is carried by a suitable platen or roller D . Preferably, I provide for the shifting of the type-holders by employing for each type-holder a projection or extension C^2 , connected or formed in piece with the holder, and extending therefrom in such manner that, as the type-bars are operated, the extension will strike or contact with a suitable bar or plate to effect the shifting of the type-holder from its normal position to the proper position for printing. In order to permit the free movement of the extensions C^2 the back plate c^2 , of each of the type-bars is cut away, as at c^3 .

The precise construction of the type-holder C' and its extension C^2 may be varied widely without departing from my invention; but I have found in practice the construction shown to be an advantageous one. Each of the extensions C^2 of the type-holders is preferably curved, as shown, and at a point just beneath the platen d of the machine is placed a suitable type-shifting bar E , having an annular portion E' , with which the extensions C^2 of the type-holders will contact in order to cause the shifting of the holders to the proper position for printing. The shifting-bar E may be conveniently bolted, as at e , to the top A' of the machine, (see Fig. 2,) the annular portion E' of the bar extending beneath and around the point or common center at which all the type strike.

From the foregoing construction it will be seen that when any one of the type-levers B is depressed it will cause the corresponding type-bar C to be shifted, as seen in Fig. 4, thereby carrying upward the type-holder C' until the extension C^2 of this holder contacts with the annular portion E' of the shifting-bar E . This contact of the projection C^2 of the type-holder with the annular portion E' of the type-shifting bar will cause the type-holder to turn about its pivot-point c' until its type is presented into position to print upon the paper that is carried by the platen D . The type-bar C , illustrated at the left-hand side of Fig. 4 of the drawings, shows the position occupied by the type-bar when its key-lever is in depressed condition. When either of the key-levers is released after having been struck by the operator, the lever will be drawn upward to its normal position, as will presently more fully appear, and by the same operation the corresponding type-bar C

will be forced downward to the position shown by the type-bar at the right-hand side of Fig. 4 of the drawings. As this type-bar C moves downward it will strike a suitable buffer-ring F , preferably furnished with a cushion f , and the type-holder C' and the extension C^2 will be turned to the position shown. The buffer-ring F is connected by suitable arms f' with a ring F^2 , that is bolted to the top plate of the machine; or obviously this buffer-ring F may be held to the frame of the machine in any other convenient manner. The cushion f is employed to lessen the shock and noise incident to the striking of the type-bars C against the buffer-ring F .

In order to effect the inking of the type, I prefer to employ the mechanism next to be described. At a slight distance below the type is held an ink-pad G , this pad in the construction shown being of circular shape, although obviously the shape of the pad may be varied to correspond with any desired arrangement of the type-bars. (See Figs. 1, 4, and 8.) The upper face of the pad G will have suitable ink applied thereto, so that when the pad is moved into contact with the faces of the type carried by the type-holders C' the type will be inked.

In order to enable the pad G to be readily brought into contact with the face of the type, I prefer to mount this pad on suitable levers G' , that are carried by dependent arms or brackets G^2 , that are connected together at their lower ends by the rod g , whereon the levers are fixed, so that the levers G' shall move in unison. The upper ends of these bars or brackets G^2 will be conveniently bolted to any convenient fixed part of the structure. The pad G is preferably connected with one end of each of the levers G' by means of a pivoted link g' and a rod g^2 , extending from such link to the pad. The opposite ends of the levers G' are connected by rods g^3 with the levers H of the space-bar H' , this space-bar extending preferably across the front of the machine and having its levers H pivoted at the rear of the machine in the usual manner.

From the foregoing description it will be seen that each time the space-bar H' is operated to effect the necessary space between words the downward movement of the side bars or levers H of the space-bar will through the medium of the rods g^3 , the levers G' , links g' , and rod g^2 cause the ink-pad G to be raised until it contacts with the face of the types, and hence an inking of the types will be effected after each word is printed.

It is obvious that other means may be employed for operating the ink-pad G ; but I prefer to connect this ink-pad with the space-bar, because an inking of the type between each word will be found sufficient in practice, and the additional power necessary to cause the raising of the ink-pad will be found very slight.

The paper-carriage feed mechanism of my

improved construction will next be described. The paper-carriage is shown as of the type commonly employed in the Remington machines—that is to say, the carriage consists of a frame having side bars K K', front bar K², and rear bar K³, there being journaled between the side bars K K' the paper-carrying roll or platen D, the presser-roll D', and suitable pulleys d², whereby the rubber bands or tapes d³ will be carried in manner well understood in the art. (See Figs. 1, 2, 3, and 4.) In front of the roller or platen D will extend the guide-plate D², and at the rear of the platen or roller will be employed the usual paper-carrying plate D³. From the rear bar K³ of the paper-carriage depend the arms or extensions 10, that encircle the back rod L of the machine, this back rod being of the usual construction—that is to say, with its surface partially round and partially polygonal, and upon the upper surface of the back rod L will travel the friction-rollers 11, that are journaled to the rear bar K³ of the carriage. The back rod L is journaled within suitable bearings l, and upon this back rod is placed the usual adjustable stop or plate L', whereby the length of the lines will be determined. Upon the sleeves 12, that encircle the back rod L and set within the openings in the arms or extensions 10, are journaled the annular portions 13 of the arms 14 of the plate 15, that serve to carry the rack-bar M, this plate 15 being provided with the usual slot 16 and set-screw 17, so that by the adjustment of the set-screw 17 to any desired point within the slot the set-screw can be caused to contact with the stop-plate 18, that rises from the top plate of the machine, and thus arrest at any desired point the forward movement of the paper-carriage to determine the length of the lines, and can also cause the tripping of the bell-rod I to ring the bell I' in the usual manner. With this rack-bar M will engage a pinion M', that is mounted upon a shaft m, journaled within suitable depending portions of the top plate A' of the machine-frame. Upon the outer end of the shaft m is fixed a ratchet-wheel m', with which will engage a pivoted check-pawl m², to guard against the accidental movement of the ratchet-wheel, and with which will engage also the feed-pawl N, that is preferably of spring metal and has its lower end attached to the rocking bar n. A suitable guard-strip 15^a, attached to the back part of the top plate of the machine, may be employed to prevent the accidental displacement of the feed-pawl N. (See Fig. 9.) The rocking bar n has preferably cast in piece therewith a shaft n', that is journaled in the inwardly-projecting arms o of a bracket O, that is bolted to the under side of the top plate A' of the main frame, or the shaft n' may be formed separate from and attached to the rocking bar n. (See Figs. 9 to 12.) Upon this shaft n' of the rocking bar is fixed a sleeve 17^a, with which will engage one end of a coiled spring 18^a, that is wound

upon the shaft, the opposite end of this spring being connected to a cross-bar 19 of the bracket O. The purpose of this coiled spring is to draw downward the back end of the rocking bar n and the feed-pawl N, that is pivotally connected thereto. The inner end of the rocking bar n is attached, as at 20, to the cross-bar n², (see Figs. 3, 10, 11, and 12,) that extends from side to side of the machine, and from the outer ends of this bar n² lead the rods 21, that connect the bar n² with the usual letter-space bar N'. (See Fig. 3.) This letter-space bar N' extends transversely beneath all the key-levers B, and by reason of the force of the coiled spring 18^a is held firmly against the bottom edges of the key-levers and aids in lifting these levers after each depression, since, as well understood, the depression of any key-lever serves to produce a corresponding depression of the letter-space bar N'. Hence it will be seen that when any one of the key-levers is depressed the downward movement of the letter-space bar N' will cause the rocking of the bar n and will cause the lifting of the feed-pawl N, and when the lever so depressed is released the coiled spring 18^a will cause a reverse movement of the rocking bar n and a downward movement of the feed-pawl N, so that a partial revolution will be imparted to the ratchet-wheel m' and through the shaft m to the pinion M' and rack-bar M. Hence it will be seen that at each movement of the space-bar incident to the depression of any of the keys a corresponding advance of the paper-carriage will be effected. It is thus obvious that the advance of the paper-carriage will be effected until it is desired to move backward the carriage to begin a new line of printing, and in order to throw the rack-bar M out of engagement with the pinion M', the throw-off mechanism next to be described is employed.

Upon the shaft n' of the rocking bar n is loosely journaled the lever 25, that carries at its rear end the throw-off rod 26, pivotally connected thereto and extending upward to a point beneath the bottom edge of the bar 15, that sustains the rack-bar. (See Figs. 10 and 11.) The front end of this throw-off lever 25 has connected thereto a transverse rod 27, to the outer ends of which are connected the rods 28, the lower ends of each of these rods being pivotally attached to a back trip lever R, that is pivoted at its rear end after the manner of the usual key-levers and is provided with a striking-plate or trip-key R' at its front end, as more particularly shown in Figs. 1 and 3 of the drawings. One of these back trip levers R may be employed at each side of the machine. I regard the construction shown, however, as the more satisfactory one. From this construction it will be seen that when the back trip lever R is operated by the depression of its key R' it will cause the rocking of the throw-off lever 25, and as the rear end of this lever moves upward the

throw-off rod 26 will strike against the bottom edge of the bar 15 and will cause this bar to swing about its pivot-points and raise the rack-bar M away from the pinion M', and will thus permit the paper-carriage to be drawn backward. In order to draw the paper-carriage backward, I prefer to employ a weight or weights S, (see Figs. 1, 2, and 3,) suspended by a cord s, that is trained over a suitable pulley s' and is connected with the paper-carriage at a convenient point—for example, to the bracket S², that depends from the rear bar K³ to a point below the back bar L of the machine. (See Fig. 3.) The weight S must be heavy enough to draw backward the paper-carriage after the throw-off rod has been operated to raise the rack-bar M out of engagement with the pinion M', and I have shown small additional weights upon the main weight S, so that the total weight can be varied to suit the wishes of the operator of the machine. The weights are carried within a suitable cylinder S⁴ at one end of the machine, and this cylinder may be detachably connected, as by brackets S', to the frame of the machine so as to permit the weights to be varied, or the cylinder can be provided with a suitable opening to enable the weights to be inserted and withdrawn. The spring 18^a, whereby the rocking of the arm n and the downward movement of the feed-pawl N are effected, (see Figs. 9, 10, 11, and 12,) must exert greater power than the weight or weights S, so that when any key or the space-bar has been depressed, to cause the lifting of the feed-pawl N in manner before described, the spring 18^a, when restoring the feed-pawl N to its normally-depressed condition, will cause this pawl to engage with and impart a partial revolution to the ratchet-wheel m', which in turn will cause a partial revolution of the pinion M', sufficient to advance the rack-bar M the distance of one space against the force of the weight or weights S. These weights will thus be lifted at each advance of the paper-carriage until the end of the line or other point is reached, where it is desired to begin a new line, when, by the depression of the back trip key R', the rack-bar will be thrown out of engagement with the pinion M', and the weights by their gravity will withdraw the carriage to the starting-point. It is thus manifest that with my improved construction it is not necessary for the operator to draw backward the carriage at the end of each line; but it is only necessary for him to depress the back trip key R', when the weights operate to restore the carriage to the starting-point. After the back trip key is thus operated to lift the rack-bar, such bar will be held in elevated position (by means hereinafter described) until the carriage reaches the starting-point. The advantage of such construction will be recognized by any one familiar with the operation of this class of machine. It is obvious that instead of the weights S a suitable spring might be employed; but I regard the weights

as preferable, as they insure a uniform tension upon the paper-carriage throughout its travel.

As it is sometimes desired to move backward the paper-carriage a short distance—for example, to correct a misprinted letter or supply an omission—I prefer to employ, in addition to the back trip lever of my above-described construction, a throw-off key or lever T, (see Figs. 1, 2, 3, 6, and 7,) that connects with or is formed in piece with one of the arms 14 of the bar 15, that carries the rack-bar M, so that by depressing the key or lever T the bar 15 will be raised and will lift the rack-bar M out of engagement with the pinion M' in the same manner that in the well-known Remington machine the operation of a similar key or lever T serves to lift the rack-bar of such machine out of engagement with its escapement-pawls.

In order to effect a partial revolution of the paper-carrying platen or cylinder D sufficient to advance the paper the proper distance to form the space between the lines of printing, I provide the mechanism next to be described, reference being more particularly had to Figs. 2, 3, 6, and 7 of the drawings. To one end of the cylinder D is fixed the ratchet-wheel D⁴, with which will engage a check-pawl d⁵, of usual construction. With this ratchet-wheel D⁴ engages the end 40 of the line-feed pawl W, this pawl having its rear end pivoted, as at 41, to the angular pawl-operating bar or lever W', that is pivoted, as at 42, (see Figs. 1 and 2,) to the lug 43, beneath the side bar K of the paper-carriage frame. The rear portion of the angular pawl-operating bar W' is provided, preferably, with an arm 45 and with an inwardly and rearwardly extending catch-arm 46, this catch-arm having preferably an inclined face (see Figs. 6 and 7) to better engage with the inclined hook end 50 of the catch-bar V, the annular portion v of which is pivoted upon the sleeve 12 and the back bar L. A spring 60, having one end attached to the rear bar K³ of the carriage, (see Figs. 2 and 3,) bears upon the catch-arm V, and serves to temporarily hold this arm in engagement with the catch end 46 of the pawl-operating bar W' against the force of a spring 62, that is fixed to one of the side bars K of the paper-carriage, and bears with its free end upon a stud 63, that rises from the pawl-operating bar W' and tends to draw the catch-arm 46 of such bar away from the catch V. (See Fig. 7.) To the rear of the annular part v of the catch-arm V is affixed a bar 70, which extends from side to side of the paper-carriage and is connected to a ring 71, that fits upon one of the sleeves 12 on the back bar L, so that when this bar 70 is moved downward it will, by reason of its connection with the catch V, cause this catch to be lifted, so that its hook end 50 shall pass from engagement with the catch-arm 46 of the pawl-operating bar W'. When the catch V and arm 46 are thus disengaged, the spring 62 will swing the pawl-operating bar

W' to the position seen in Fig. 7 of the drawings. Hence when the catch V and arm 46 have been thus disengaged and the paper-carriage is drawn backward by the weights S to begin a new line of printing, the arm 46 will contact with the adjustable stop L' and the back rod L, and will be forced by this stop into engagement again with the hooked end 50 of the catch V. (See Fig. 6.) As the bar W' is thus moved by reason of the contact of its catch-arm 46 with the stop L', this bar will be swung about its pivot-point against the force of the spring 62 in such manner as to cause a forward movement of the line-feed pawl W, and as the end 40 of this pawl is in engagement with the ratchet-wheel D¹ it is obvious that a partial revolution of the paper-carrying platen D will be effected. The extent of this partial revolution will be sufficient to produce the desired space between the lines of printing.

In order to effect the disengagement of the catch V from the catch-arm 46, so that the pawl-operating bar W' can be moved backward to the position seen in Fig. 7, so as to withdraw the pawl W to the proper position for making a new advance of the ratchet-wheel D¹, I provide a releasing-bar X, the preferred form of which is illustrated in Fig. 13 of the drawings. This releasing-bar X preferably has its lower portion *x* provided with a sleeve *x'*, adapted to carry a coiled spring 80 and to receive the lower end of the upper section of the releasing-bar, through which passes a pin 81, that works within slots 82 of the sleeve, so that the upper section of the releasing-bar can move with respect to the lower section. The upper section X of the releasing-bar is provided with an angular end 84, that extends over the bar 70, (see Figs. 2, 10, and 11,) while the lower end of the lower section *x* of the releasing-bar is connected to the transverse rod 27, to which rod is also connected, as already explained, the rear end of the throw-off lever 25.

From the foregoing description it will be plain that when the end of a line is reached or a new line is to be begun, the operator will depress the back trip key R', and through the medium of the back trip lever R the rods 28, the transverse rod or bar 27 will be drawn downwardly, and this downward movement of the bar 27 will cause a corresponding downward movement of the releasing-rod X, and the end 84 of this rod will draw downward the bar 70, and consequently will cause the catch V to be raised out of engagement with the catch-arm 46 of the line-feed pawl-operating bar W'. The same movement, therefore, of the back trip lever which serves to raise the rack-bar M out of engagement with the pinion M' and permit the weights S to draw the carriage backward to begin a new line also effects the disengagement of the catch V from the arm 46, and allows the spring 62, through the medium of the bar W', to move this bar W' and the line-feed pawl W into

such position that as the carriage reaches the points to begin a new line of printing the line-feed pawl W will be forced forward, so as to advance the paper the proper distance for the new line of printing.

I have already stated in describing how the throw-off rod is operated to raise the rack-bar out of engagement with the pinion that when the rack-bar is raised by such rod it will be held in raised position until the paper-carriage is fully retracted to begin a new line of printing. By reference to Figs. 2, 6, 7, and 11 it will be seen that when the rack-bar is raised and the catch V is released, as before described, (see Figs. 7 and 11,) the arm 45 of the lever W' will pass between the throw-off lever T and the side bar K of the paper-carriage. Inasmuch as the throw-off lever T is connected so as to rock with the rack-bar and the back rod L it is obvious that so long as the arm 45 is thus between the throw-off lever T and side bar of the paper-carriage the throw-off lever cannot resume its normal position, but must remain depressed, and consequently hold the rack-bar lifted until at the end of the backward movement of the paper-carriage the arm 45 strikes the stop-plate L', and is thereby forced from between the shoulder *t* of the throw-off lever T and the side bar K of the paper-carriage. When the arm 45 has been thus forced backward and into engagement with the catch V, the throw-off lever T will cease to dog or hold the rack-bar in its lifted position, but will permit it to re-engage with its advancing mechanism.

My purpose in forming the releasing-bar X with the spring-seated upper portion is to permit the depression of this upper portion of the bar in case it should be found desirable to turn upward the paper-carriage to inspect the writing at a time when the rollers 11 at the back of the carriage are above such bar, since if the rod X were rigid and incapable of depression the bearings of the rollers 11 would be apt to contact against the upper end of such rod and prevent the complete uplifting of the paper-carriage.

As it is frequently desirable to revolve the plate or paper-cylinder D backward, I have provided the line-feed pawl W with a finger-piece W², whereby the pawl W may be depressed out of engagement with the ratchet-wheel D¹. The pawl W extends above the usual scale strip or bar Y, that reaches from side to side of the paper-carriage beneath the platen or cylinder D, and this scale strip may be provided with an upwardly-extending guard-plate 90 (see Fig. 1) to better prevent the accidental disengagement of the pawl W from its ratchet-wheel D¹. If, therefore, it is desired to move backward the cylinder or platen D, it is only necessary to depress the finger-piece W² until the end 40 of the pawl W is thrown out of engagement with the ratchet-wheel D¹, after which the wheel may be freely turned in either direction by the

hand of the operator. This depression of the pawl W will be readily permitted by reason of the elasticity of the material of which the parts are formed.

5 The above-described improvements in feed mechanism whereby the advancement and retraction of the paper-carriage can be effected can be used not merely in connection with my improvements in inking mechanism
10 above described, but can be used also in connection with a variety of machines in which ink-ribbons are employed, instead of a direct inking of the type. Thus, for example, in Figs. 15 and 16 of the drawings is illustrated
15 how my improved feed mechanism may be employed in connection with a machine in which an ink-ribbon is used, and it is illustrated also how the step-by-step advancement can be imparted to the ink-ribbon feed mechanism from the paper-carriage feed mechanism.
20 When my improved feed mechanism is to be used with such type of machine, it is necessary merely to attach to one side of the bracket O at the rear of the machine an extension 100, to which will be pivotally connected a rocking arm 101, that carries at its inner end a pawl 102, that is pressed normally into engagement with the ratchet-wheel 103 of the usual ink-ribbon feed mechanism—
30 such, for example, as is employed on the well-known Remington machine. The pawl 102 is pressed into engagement with the ratchet-wheel 103 by a suitable spring 104, and the outer or rear end of the pawl-bar 101 is connected by a rod 105 with the rear portion of the rocking arm n, by which the operation of the feed-pawl N is effected, as in manner hereinbefore described. Consequently it is manifest that at each operation of the space
40 mechanism a corresponding step-by-step movement will be given to the ratchet-wheel 103 by which the movement of the ink-ribbon rollers will be controlled. It will be understood also that certain features of both my improved feed mechanism and my improved type-inking mechanism may be employed without their adoption as an entirety, and that the details of construction above set out may be varied within wide limits without departing from the spirit of my invention.

50 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination, with suitable adjunctive devices, of a
55 type-bar provided at its free end with a movable type-holder pivoted to the type-bar so as to swing in the direction of its length, and a suitable contact-piece adapted to strike said holder when the type-bar is operated to move the type into position for printing, substantially as described.

2. In type-writing machines, the combination, with suitable adjunctive devices, of a
65 type-bar provided at its free end with a type-holder pivoted to the type-bar so as to swing

in the direction of its length, having a free extension, and a suitable shifting-bar adapted to contact with said extension to shift the type-holder, substantially as described. 70

3. In a type-writing machine, the combination, with suitable adjunctive devices, of a type-bar having its free end pivoted to the type, so as to swing in the direction of its length, and a shifting-bar located beneath the
75 platen of the machine and adapted to contact with and shift the type-holder, substantially as described.

4. In a type-writing machine, the combination, with suitable adjunctive devices, of a series of type-bars arranged to present their types at a common printing-point, movable type-holders attached to the free ends of said bars, and a shifting-bar having a contact portion arranged to be struck by each of said
85 type-holders in order to shift said holders, substantially as described.

5. In a type-writing machine, the combination, with suitable adjunctive devices, of a type-bar C, provided with a type-holder C',
90 pivoted thereto and having an extension C², and a shifting-bar E, with which said extension will contact, substantially as described.

6. In a type-writing machine, the combination, with suitable type-bars provided with
95 movable type-holders, of an ink-pad movably sustained and suitable lever mechanism for forcing said ink-pad against the types, substantially as described.

7. In a type-writing machine, the combination, with suitable type-bars provided with movable type-holders and type, of an ink-pad movably sustained and adapted to be forced against said type, suitable feed mechanism for the paper-carriage, suitable devices for
105 operating said feed mechanism, and suitable connection between the devices that operate the feed mechanism and the ink-pad, whereby the movement of said pad will be effected, substantially as described. 110

8. In a type-writing machine, the combination, with a series of suitable pivoted type-bars and type adapted to strike at a common center, of a movably-sustained ink-pad located beneath said type-bars, suitably-pivoted
115 levers for sustaining said ink-pad, operating-levers connected with said pivoted levers, and suitable means for moving said operating-levers to cause the ink-pad to be forced against the type, substantially as described. 120

9. In a type-writing machine, the combination of suitable type-bars provided with type-holders movably mounted with respect to said type-bars and an ink-pad located beneath said type-holders and adapted to ink the type
125 thereof, substantially as described.

10. In a type-writing machine, the combination, with an annular series of type-bars provided with type, of an annular ink-pad located beneath said type-bars, said ink-pad
130 being movably sustained, and suitable means connecting said ink-pad with the space mech-

ism for forcing the annular ink-pad bodily against the entire series of the type-bars, substantially as described.

11. In a type-writing machine, the combination, with suitable type-bars and type, of a vertically-movable ink-pad suitably connected with the space-bar by which the space between the words is effected, substantially as described.

12. In a type-writing machine, the combination, with a paper-carriage provided with a pivoted rack-bar and suitable means for advancing said rack-bar to move the paper-carriage, of a throw-off rod for lifting said pivoted rack-bar out of engagement with its advancing mechanism and suitable dogging mechanism for automatically holding said pivoted rack-bar in elevated position during its backward movement, substantially as described.

13. In a type-writing machine, the combination, with a paper-carriage provided with a rack-bar, a pinion engaging said rack-bar to move the paper-carriage, a throw-off rod for disengaging said rack-bar from its pinion, a rocking bar connected to said throw-off bar, and a pivoted key-lever connected with said rocking bar, substantially as described.

14. In a type-writing machine, the combination, with the paper-carriage provided with the paper-carrying roll having a ratchet and a feed-pawl sustained by said carriage for rotating the paper-carrying roll, a pivoted lever for operating said pawl, a catch for engaging said lever to hold the pawl, and a releasing device for throwing said catch out of engagement with said lever, and a suitable stop adapted to contact with said lever when released to effect the partial rotation of the paper-carrying roll, substantially as described.

15. In a type-writing machine, the combination, with the paper-carriage provided with a paper-carrying roll having a ratchet and a feed-pawl for operating said roll, of a pivoted lever for operating said pawl, a catch for engagement with said pivoted lever, a releasing-bar connected with said catch, a releasing-rod for engagement with said releasing-

bar, and a suitable lever connected with said releasing-rod, whereby it may be operated substantially as described.

16. In a type-writing machine, the combination, with the paper-carriage provided with a rack-bar and a paper-carrying roll having a ratchet and a feed-pawl for operating said roll, of a pivoted lever for operating said pawl, a catch for engagement with said pivoted lever, a releasing-bar connected with said catch, a releasing-rod for engagement with said releasing-bar, a suitable lever connected with said releasing-rod, and a throw-off rod for effecting the disengagement of the rack-bar from its advancing mechanism, said throw-off rod being also connected with the lever that operates the releasing-rod, substantially as described.

17. In a type-writing machine, the combination, with the paper-carriage provided with a rack-bar and a paper-carrying roll having a ratchet and a feed-pawl for operating said roll, of a pivoted lever for operating said pawl, a catch for engagement with said pivoted lever, a releasing-bar connected with said catch, a releasing-rod for engagement with said releasing-bar, and a suitable lever connected with said releasing-rod, whereby it may be operated, said releasing-rod having its upper end yielding, whereby it may be depressed, substantially as described.

18. In a type-writing machine, the combination of a paper-carriage provided with a rack-bar and mechanism for advancing said rack-bar and having a paper-carrying roll, a ratchet and a feed-pawl for rotating said roll, a suitable catch for temporarily retaining said pawl in forward position, a releasing-bar for releasing said catch, a releasing-rod for operating said releasing-bar, a throw-off rod for lifting the rack-bar out of engagement with its advancing mechanism, and a lever for simultaneously operating said releasing-rod and its throw-off rod, substantially as described.

BENJAMIN M. STEELE.

Witnesses:

ARTHUR KEITHLEY,
H. W. WELLS.