

1,014,340.

2 SHEETS—SHEET 1.



E. M. Wells.
Charles Smith

Arthur W. Smith

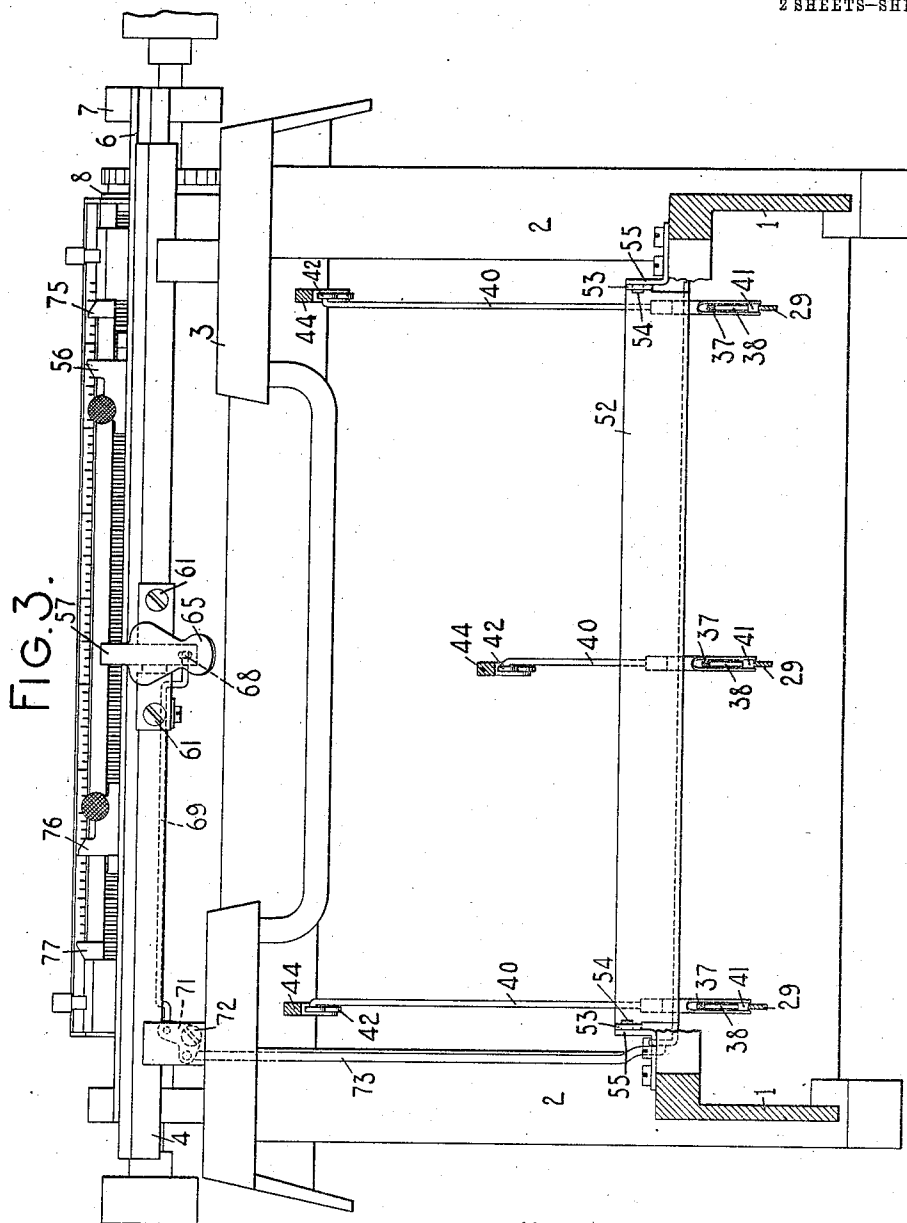
By Jacob Felber

HIS ATTORNEY

1,014,340.

Patented Jan. 9, 1912

2 SHEETS-SHEET 2.

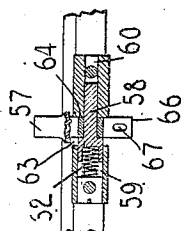


WITNESSES:

E. M. Wells

Wm. E. Smith

FIG. 4.



INVENTOR:

Arthur W. Smith

By Jacob F. Felt

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UNITED STATES PATENT OFFICE.

ARTHUR W. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,014,340.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed November 21, 1910. Serial No. 593,395.

To all whom it may concern:

Be it known that I, ARTHUR W. SMITH, citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to automatically actuated means for rendering the movements of the printing keys inoperative to actuate the printing instrumentalities, as for instance, when the carriage reaches the end of a line, thus preventing the "piling-up" of the characters at the end of a line.

The main object of my invention, generally stated, is to provide comparatively simple and efficient mechanism of the character specified.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a fragmentary, central, vertical, fore and aft sectional view of one form of typewriting machine embodying my invention, sufficient parts only of the machine being shown to illustrate my invention in its embodiment therein. Fig. 2 is a fragmentary, detail, side elevation of some of the parts shown in Fig. 1, the parts being represented in different positions from those in which the corresponding parts are shown in Fig. 1. Fig. 3 is a fragmentary, front elevation of the machine with parts in section. Fig. 4 is a fragmentary transverse sectional view of one of the contact devices for the controlling mechanism, the section being taken on the line $x-x$ of Fig. 1 and looking in the direction of the arrow at said line.

I have shown my invention embodied in the present instance in a No. 10 Remington machine, though it should be understood that the invention may be embodied in various styles of typewriting machines.

In the drawings I have represented the platen and the means for supporting the

same in the carriage in a conventional manner.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. The top plate supports fixed oppositely grooved guide rails 4 which receive anti-friction balls or rollers 5, and these rollers are likewise received in oppositely grooved rails 6. The rails 6 constitute the forward and rear cross bars of a carriage 7. The carriage is thus mounted for movement from side to side of the machine over the top plate. A cylindrical platen 8 is supported in the carriage in any suitable manner. Arms 9 are pivoted at 10 to lugs 11 which project upwardly from the rear cross bar of the carriage, near the ends thereof. These arms support a feed rack 12 which meshes with a feed pinion 13. The feed pinion is fixed to the forward end of a shaft 14 mounted to turn in a bearing 15, secured to the top plate of the machine. The rear end of the shaft 14 extends beyond the bearing 15 and has a double escapement wheel 16 secured thereto. The escapement wheel may be of the character employed in the No. 10 Remington machine, a single feed dog 17 cooperating therewith. The feed dog is carried by a dog rocker 18, pivoted at 19 to rearwardly extending bracket arms 20 carried by a bracket plate 21, secured to and depending from the top plate. A forwardly projecting arm 22 projects from the dog rocker and has a downwardly extending link 23 connected therewith. The lower end of this link is connected to a rearwardly extending crank arm 24 which projects from a rock shaft 25 mounted at its ends in suitable bearings in the base of the machine. The rock shaft also has, near the ends thereof, rearwardly projecting crank arms 26 connected to depending links 27 which support a universal bar 28, the latter extending beneath the series of key levers 29. A contractile spring 30 is connected at one end to a pin 31 projecting from the dog rocker, whereas the opposite end of said spring is connected to an arm 32 secured to the bracket plate 21. This spring returns the dog rocker and universal bar to normal position shown in Fig. 1. It will be understood that each down and up movement of the universal bar is effective to afford a letter space movement of the carriage under the power

applied thereto by the usual spring drum (not shown).

The key levers 29 are fulcrumed on a fulcrum plate 33, secured to the base of the machine, and each key lever is connected to one end of a contractile spring 34; the opposite end of which is connected to a finger 35 secured to the base of the machine. The key levers extend forwardly from the fulcrum plate and are each provided with a finger key 36. Each key lever has an upwardly extending projection 37 with a vertically disposed slot 38 therein. The lower end of each slot is extended rearwardly to form an off-set engaging notch 39. An upwardly extending actuating link 40 coöperates with each key lever and is provided at its lower end with an engaging device or pin 41 received in the slot 38 of the associated key lever 29. Each pin extends between arms formed by the lower bifurcated end of its associated actuating link. Each pin 41, as will be seen from a comparison of Figs. 1 and 2, is adapted to move in the vertical slot of the associated key lever, or to be received in the engaging notch or opening 39 in the lever. The upper end of each actuating link 40 is pivotally connected to a sub-lever 42 pivoted at 43 to a hanger 44. The rear end of each sub-lever is connected to a link 45 which in turn is connected at its rear end to a type bar 46. Each type bar is pivoted at 47 to a hanger 48 secured to a type bar segment 49 and the type bars are segmentally arranged on the segment to move upwardly and rearwardly to strike against the front face of the platen 8. Each of the actuating links 40 extends through an opening 50 in a controlling device or member comprising a horizontally disposed flange or bar 51 which extends transversely of the machine across and above the system of key levers. An upwardly extending flange 52 is formed as a part of the bar 51 and is provided with forwardly extending ears 53 at the ends thereof. These ears are pivoted at 54 to bracket arms 55, secured to the base of the machine. In this manner the bar 51—52 is pivotally supported for movement from the position shown in Fig. 1 to that indicated in Fig. 2, or vice versa. The openings 50 in the bar or controlling member are such as to afford a free longitudinal movement of the actuating links during the operation of the type bars under control of the finger keys. When, however, the controlling bar is moved from the position shown in Fig. 1 to that indicated in Fig. 2, it is effective to swing the links around their upper pivoted ends, thus moving the lower ends of the entire set of actuating links transversely and toward the front of the machine, to carry the pins 41 thereon out of the engaging notches 39 and into the lower ends of the slots 38. It will be understood that at this time an actuation

of any of the finger keys 36 is ineffective to transmit movement to the associated actuating link 40 and the type bar controlled thereby; the pin 41 playing freely in the slot 38. The effect therefore of moving the bar 51—52 from the position shown in Fig. 1 to that indicated in Fig. 2 is to disconnect the printing keys 36 from the type bars or to afford a lost motion between the parts; whereas a movement of the bar in the opposite direction or toward the rear of the machine is effective to seat the pins 41 on the various actuating links in the engaging notches 39 in the key levers, thus reestablishing operative and positive connection between the finger keys and the type bars.

The bar 51—52 is automatically controlled by the travel of the carriage, so that when the carriage reaches the end of a line for instance, said bar will be moved to the position shown in Fig. 2, thereby automatically disconnecting the printing keys from the printing instrumentalities or type bars. Any suitable means may be employed to bring about the automatic actuation of the bar 51—52. In the present instance I have shown means similar to the line lock devices employed in the No. 10 Remington machine, for effecting an actuation of the bar. Thus an adjustable stop or contact device 56 is supported on the front cross bar of the carriage for adjustment thereon in the direction of the travel of the carriage. This contact device is adapted to coöperate with an upwardly extending contact device 57 mounted on the frame of the machine. From an inspection of Fig. 4 it will be observed that this contact device 57 is fixedly mounted on a trunnion-like pivot 58 which is received in bearings 59 and 60 of a bracket which is secured by screws 61 to a front fixed carriage rail. An expansion spring 62 is received in the bearing 59 and bears against a fixed abutment at one end and against the bottom wall of a recess in one end of the pivot 58. The pressure of this spring is exerted to move the contact device 57 axially of its pivot 58 and to the right. Contact walls 63 co-act with the contact device 57 to limit its movement to the left after a movement has been transmitted thereto corresponding to a single letter space movement of the carriage. The contact device 57 is maintained normally in engagement with contact walls 64 by the pressure of the spring 62, said walls limiting the movement of the device 57 to the right. It will be understood that the contact device 57 is mounted for axial as well as for pivotal movement around the pivot 58, the axial movement being effected in one direction against the pressure of the spring 62. The pivotal movement of the contact device is effected by a finger piece 65 connected directly therewith and arranged at the front of the machine where

it is convenient for actuation. The part 57—65 is restored to normal position around its pivot 58 by the spring 62. A depending portion 66 is formed on the contact device 57 and this depending portion is slotted at 67 for the reception of a bent end 68 of a connecting link or rod 69. The rod 69 extends to the left and is received in a groove or cut-out 70 in the bottom of the forward fixed guide rail. The left-hand end of this rod is connected to an angular lever 71, pivoted on a shouldered pivot screw 72, carried by the left-hand forward bracket which supports the forward guide rail 4. A depending link 73 is connected at its upper end to the angular or bell crank lever 71, and at its lower end to an upwardly projecting ear 74 formed on the flange 51 of the controlling bar or member 51—52 at one end thereof.

It will be understood that the carriage in its movement from right to left is effective to bring the contact device 56 into engagement with the contact device 57, moving the latter to the left. This movement of the contact device 57 takes place after the operator has been notified by the usual alarm mechanism, not shown, of the approach of the carriage to the end of the line. The power of the carriage spring in the movement of the carriage from right to left is effective to overcome the power of the spring 62 and to move the contact device 57 to the left with the carriage a distance corresponding to a letter space movement of the carriage. This movement of the contact device 57 is effective to move the link 69 longitudinally, transmitting a downward movement to the link 73, through the interposed bell crank 71. The downward movement of the link 73 is effective to move the controlling member 51—52 from the position shown in Fig. 1 to that indicated in Fig. 2, thus throwing the pins 41 on the set of actuating links out of the engaging notches 39 and into the slots 38. A depression of a finger key at this time merely results in depressing the associated key lever without transmitting movement to the printing instrumentalities, the pin 41 on the associated link playing freely in the slot 38. The key lever moving down independently of the associated type bar 46 and its actuating connections 45, 42 and 40 will move with a lightness of touch which will at once warn the operator that the parts are disconnected and that the type bars cannot be operated.

I preferably employ a fixed stop rod 91 covered with a cushion 92 against which the disconnected key levers are adapted to strike to limit their downward movements at about the termination of the lost motion between the key levers and the links 40, as shown in Fig. 2. This stop rod extends transversely beneath the key levers

and may be fixed to the frame of the machine by any suitable means. The construction and relation of the parts are such that the key levers do not reach the stop rod when they are connected to actuate the type bars.

When the key levers are disconnected from the type bars the universal bar 28 will be depressed by an actuation of a finger key but this will merely result in moving the dog forwardly and back through the escapement wheel without movement being transmitted to the carriage, which latter at this time is held against further movement by the co-operation of the contact devices or stops 56 and 57. The stops can move no farther to the left and they hold the carriage in the position at which it has been arrested. Should the operator desire to reestablish connection between the finger keys and the printing instrumentalities, to insert a hyphen or complete a word, it is merely necessary to depress the finger piece 65, thus moving the contact device 57 out of the path of the stops 56. This clearance of the stops enables the spring 62 to move the stop or contact device 57 to the right, thus enabling the parts to be restored to the normal positions indicated in Fig. 1, and reestablishing operative connection between the finger keys and the printing instrumentalities. The operator is then at liberty to continue the writing.

It will be understood that in the use of my invention no shock or strain is exerted on the parts by an attempted actuation of the type bars after the carriage reaches the end of a line, as is the case when line lock mechanism is employed, the parts locked by the line lock mechanism resisting the pressure exerted by the operator on the finger keys.

A final contact device 75, a margin stop 76 and a final margin stop 77 are constructed and arranged in the same manner as in the No. 10 Remington machine, and coöperate with the contact device 57 in the same manner as the corresponding parts in said machine. Further description of the operation of these parts is deemed unnecessary for the purpose of my present invention.

It will be understood that an adjustment of the stop 56 regulates the length of a line; that the intermediate actuating connections between the finger keys and type bars are such that they may be automatically broken or rendered ineffective to transmit movement from the finger keys to the type bars; that in the present instance the effective connection is "broken" by the production of a lost motion connection due to the pins 41 working in the slots 38, and that the finger piece 65 and the parts controlled thereby constitute hand controlled means operable at will to reestablish operative connection between the finger keys and printing instru-

mentalities, and thereby render the finger keys operative on the printing instrumentalities.

I believe that I am the first to provide means for automatically breaking the operative connection between the printing keys and the printing instrumentalities by the travel of the carriage and when the end of a line is reached so that the actual breaking of the operative connection is effected by the carriage itself, and it will be understood therefore that within this broad aspect of the invention various changes may be made without departing from the spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a carriage, contact devices which are brought into coöperation when the carriage reaches the end of a line, printing instrumentalities, finger keys therefor, and means controlled by the said contact devices coöperating one with the other and during the travel of the carriage to simultaneously disconnect all of the printing keys from the printing instrumentalities.

2. In a typewriting machine, the combination of a carriage, contact devices, one carried by the carriage and the other carried by the frame of the machine, said contact devices being brought into coöperation when the carriage reaches the end of a line, means for effecting a relative adjustment between said contact devices to determine the length of a line, printing instrumentalities, key levers normally operatively connected to said printing instrumentalities, and means controlled by said contact devices coöperating one with the other during the travel of the carriage to simultaneously break the operative connections between all of said key levers and printing instrumentalities.

3. In a typewriting machine, the combination of a carriage, printing instrumentalities, finger keys normally operatively connected to said printing instrumentalities, and automatically operated means which are actuated by the travel of the carriage and when the carriage reaches the end of a line to simultaneously disconnect the finger keys from the printing instrumentalities.

4. In a typewriting machine, the combination of a carriage, printing instrumentalities, finger keys therefor, intermediate connections between said finger keys and printing instrumentalities, and automatically operated means controlled by the movement of the carriage for shifting certain of said connections relatively to others, to simultaneously disconnect the parts and render the movement of the finger keys inoperative to move the printing instrumentalities.

5. In a typewriting machine, the combination of a carriage, type bars, finger keys, intermediate connections between said finger keys and type bars, said connections including links, means for effecting a disconnection between said links and finger keys by a lateral movement of the links, and automatically operated means for moving said links laterally when the carriage reaches the end of a line, to effect a disconnection between the parts and thereby render the finger keys inoperative to move the type bars to the printing positions.

6. In a typewriting machine, the combination of a carriage, type bars, finger keys, intermediate connections between said finger keys and type bars, said connections including links, means for effecting a disconnection between said links and finger keys by a lateral movement of the links in one direction and for effecting an operative connection between said links and finger keys by a lateral movement of the links in the opposite direction, and automatically actuated means for moving said links laterally in one direction when the carriage reaches the end of a line to effect a disconnection between said finger keys and type bars and for moving the links laterally in the opposite direction to effect an operative connection between said links and finger keys when the carriage is moved in the opposite direction.

7. In a typewriting machine, the combination of a carriage, printing instrumentalities, finger keys, devices actuated by said keys for operating the printing instrumentalities, certain of said devices having slots and engaging means with which other of said devices are adapted to coöperate, and automatically actuated means operated when the carriage reaches the end of a line for effecting a relative movement between said devices to throw the engaging means on one set of said devices out of engagement with the companion engaging means on another set of said devices and into said slots.

8. In a typewriting machine, the combination of a carriage, a contact device on the carriage, a coöperative contact device on the frame of the machine, means by which a clearance between said contact devices may be effected, printing instrumentalities, finger keys therefor, and automatically actuated means controlled by said contact devices and by the travel of the carriage for simultaneously disconnecting all of the printing instrumentalities from the finger keys when the carriage reaches the end of a line and for reestablishing operative connection between said finger keys and printing instrumentalities when a clearance between said contact devices is effected.

9. In a typewriting machine, the combination of a carriage, printing instrumentalities, finger keys therefor, intermediate connec-

tions between said finger keys and printing instrumentalities, automatically operated means controlled by the movement of the carriage for shifting certain of said connections relatively to others to disconnect the parts and render the movement of the finger keys inoperative on the printing instrumentalities, and hand controlled means operable at will to effect a relative movement between certain parts of said intermediate connections to reestablish operative connection between the finger keys and printing instrumentalities.

10. In a typewriting machine, the combination of a carriage, type bars, finger keys, intermediate connections between said finger keys and type bars, said connections including links, means for effecting a disconnection between said links and finger keys by a lateral movement of the links, automatically operated means for moving said links laterally when the carriage reaches the end of a line, to effect a disconnection between the parts and thereby render the finger keys inoperative to move the type bars to the printing positions, and hand controlled means for effecting a lateral movement of the links in the opposite direction to reestablish connection between the parts and render the finger keys operative to move the type bars.

11. In a typewriting machine, the combination of a carriage, printing instrumentalities, finger keys, devices actuated by said keys for operating the printing instrumentalities, certain of said devices having slots and engaging means with which other of said devices are adapted to cooperate, automatically actuated means operated when the carriage reaches the end of a line for effecting a relative movement between said devices to throw the engaging means on one set of said devices out of engagement with the companion engaging means on another set of said devices and into said slots, and hand controlled means for effecting a relative movement between said devices in the opposite direction to throw the engaging means thereon out of said slots and reestablish operative connection between the parts.

12. In a typewriting machine, the combination of a carriage, a contact device on the carriage, a cooperative contact device on the frame of the machine, one of said contact devices being mounted for movement in two directions, a movement in one direction be-

ing effected by the cooperation of said devices during the travel of the carriage and a movement in the other direction clearing said devices, printing instrumentalities, finger keys therefor, and means controlled by said movable contact devices for effecting an operative connection and disconnection between said finger keys and printing instrumentalities, the movement of said movable device in one direction effecting a disconnection between the keys and printing instrumentalities, and a movement in the other direction effecting an operative connection between the keys and printing instrumentalities.

13. In a typewriting machine, the combination of a carriage, a perforated movably mounted bar, printing instrumentalities, finger keys therefor, intermediate connections between said finger keys and printing instrumentalities, said connections including actuating links which pass through the perforations in said bar, means for effecting a disconnection between said links and parts of said connections by a lateral movement of the links, and automatically actuated means for moving said bar when the carriage reaches the end of a line, to move the links laterally and thereby disconnect the parts and render the finger keys inoperative to move the printing instrumentalities.

14. In a typewriting machine, the combination of a carriage, a perforated movably mounted bar, printing instrumentalities, finger keys therefor, intermediate connections between said finger keys and printing instrumentalities, said connections including actuating links which pass through the perforations in said bar, means for effecting a disconnection between said links and parts of said connections by a lateral movement of the links, and cooperative contact devices for controlling the back and forth movements of said bar and thereby effecting a connection and disconnection between said links and the members with which they cooperate.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York this 19th day of November, A. D. 1910.

ARTHUR W. SMITH.

Witnesses:

CHARLES E. SMITH,
M. F. HANNWEBER.