

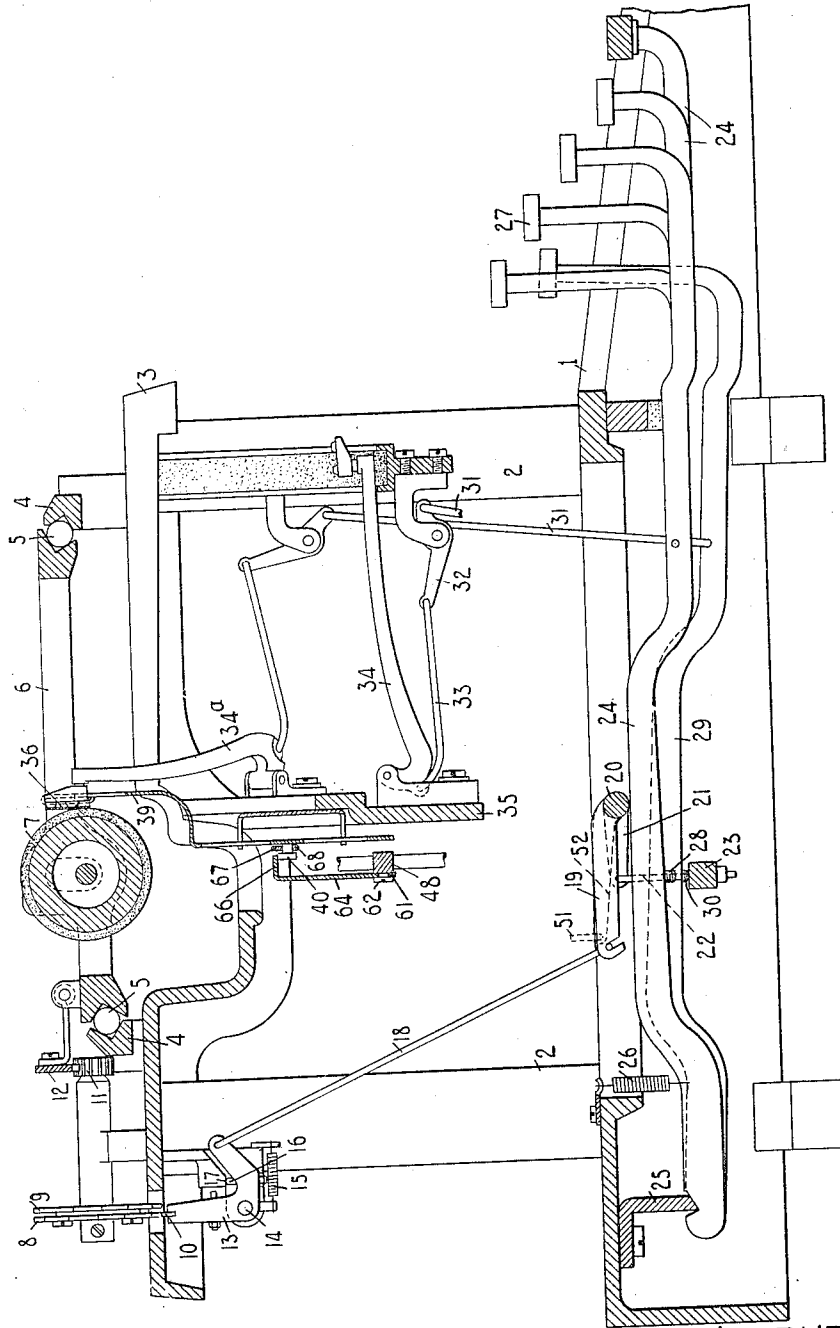
1,016,968.

A. W. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED JAN. 26, 1911.

Patented Feb. 13, 1912.

2 SHEETS—SHEET 1.

FIG. 1.



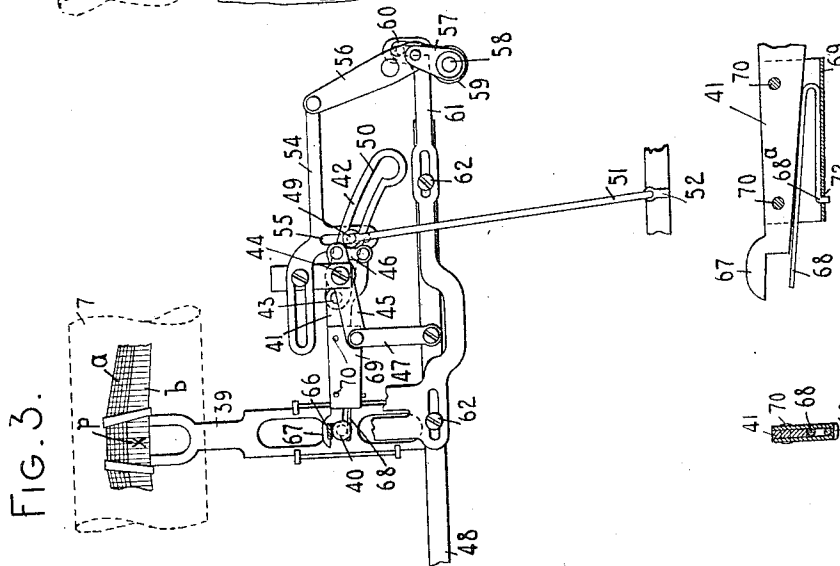
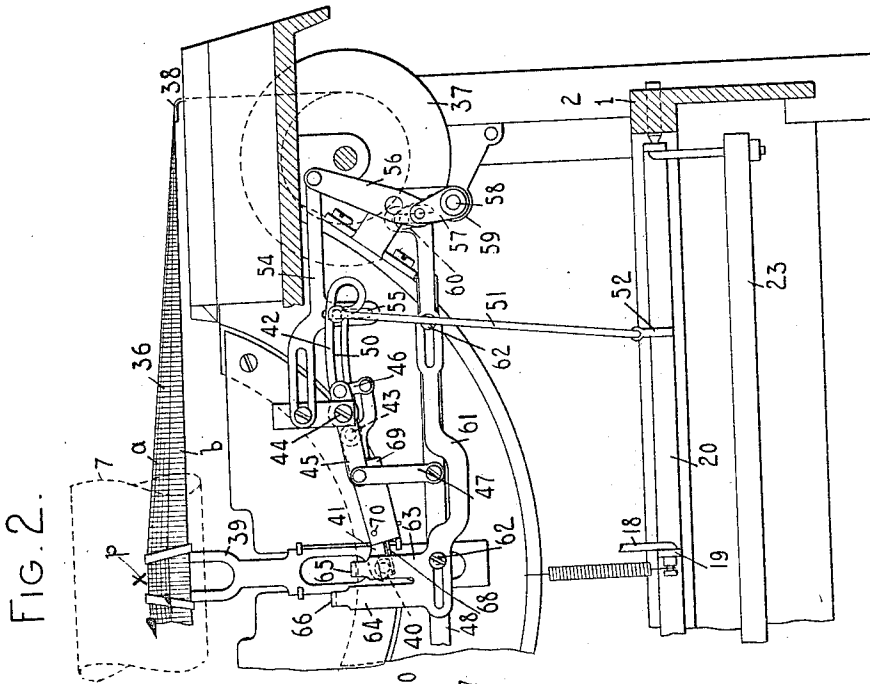
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UNITED STATES PATENT OFFICE.

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.

1,016,968.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed January 26, 1911. Serial No. 604,779.

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 printing mechanism for type-writing machines and especially to what is commonly termed "dead" key or accent key mechanism and the connections therebetween and the ribbon actuating devices. In such dead key mechanisms it is necessary to so adjust the parts that the dead key when actuated will not operate the escapement devices to cause a letter space advance of the carriage but will operate the ribbon vibrating mechanism to present the ribbon in the path of the dead key type in order that an impression may be made therefrom.

In prior construction it has been difficult to adjust the various cooperating parts so that while the dead key will not actuate the escapement devices it will vibrate the ribbon to cover the printing point, and comparatively elaborate expedients have been resorted to to obviate this difficulty.

The object of my present invention is to provide simplified and improved mechanism to obtain the results aforesaid. In the Remington No. 10 typewriting machine to which my invention is shown as applied, I am enabled to obtain the results sought by a special yielding connection between the ribbon vibrator and the operating lever with which the same is connected, in connection with special adjustments of other parts.

To the above and other ends my invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter explained and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a fragmentary vertical front to rear sectional view of a No. 10 Remington typewriter embodying my invention. Fig. 2 is a fragmentary transverse vertical section of said machine viewed from the rear. Fig. 3 is a view corresponding with Fig. 2 but omitting some of the parts shown therein and showing other parts in different relationships. Figs. 4 and 5 are respectively

transverse and longitudinal sectional views of a novel spring device or connection.

As shown in Figs. 1 and 2, the main frame of the machine comprises a base 1, corner posts 2 and a top plate 3, said top plate sustaining fixed track ways 4 which cooperate with rollers 5 on a truck 6, said truck supporting a platen frame (not shown) in which is mounted a rotary platen 7. The carriage comprising the truck and platen frame is impelled by a spring drum (not shown) and its letter spacing movements are controlled by escapement devices comprising toothed escapement wheels 8 and 9 and a cooperating feed dog 10. The escapement wheels are operatively connected with a pinion 11 which meshes with a rack 12 supported on the carriage, while the dog 10 is mounted at the top of a dog rocker 13 pivoted at 14 to a fixed bracket and maintained in the normal or Fig. 1 position by a spring 15 and cooperating stops 16 and 17. The dog rocker is connected by a link 18 with an arm 19 on a rock shaft 20, said rock shaft carrying crank arms 21 from which is suspended by links 22 a universal bar 23, said universal bar underlying and extending transversely of a set of printing key levers 24 fulcrumed on a fixed angular bar 25 and each provided with a restoring spring 26 and a finger key 27. Each key lever carries an adjustable contact or screw pin 28 which projects downward below the under edge of said key lever and cooperates with the top face of the universal bar 23 to actuate the escapement devices at printing operation.

The accent or "dead" key lever, shown depressed in Fig. 1 and specifically designated as 29, is similar in construction to the other key levers, but the adjustable contact device or screw pin 30 of the accent key lever is screwed upward or adjusted higher than the other pins 28 so that there is more lost motion between the accent key lever and the universal bar, and said universal bar will therefore not be picked up or actuated by the accent key lever until after a considerable extent of initial key depression. The adjustment is such that the accent key lever will not depress the universal bar far enough to cause it to swing the feed dog or escapement element 10 forward out of engagement with the rear escapement wheel or element 8 and consequently the carriage will not ad-

vance a letter space distance when the accent key is operated but will remain in the same position at the end of such operation as it occupied prior thereto. The key levers 24 and the accent key lever 29 are connected each through links 31, levers 32 and other links 33 with type bars 34 pivotally supported on a stationary segment 35 and segmentally arranged below the platen, each type bar 34 being adapted to cooperate with the front or printing face of the platen, the type bar 34^a connected with the accent key lever 29 being shown in Fig. 1 in printing position.

A ribbon 36 is wound on spools 37 connected in a known manner with the carriage power or spring drum and adapted to be driven in alternation to feed the ribbon lengthwise back and forth. The ribbon is guided upward, inward and rearward from the spools 37 over guides 38, and midway between the spools is threaded through the slots of a vibrator 39, the stem or lower portion whereof is provided with a rearwardly extending headed pin 40. This pin is engaged as hereinafter described by a two-part operating lever comprising a lever part 41 and a lever part 42, the lever part 41 being pivoted at 43 to the lever part 42 which has a fixed fulcrum 44, the relationship between the lever parts being controlled by devices comprising a lever 45 connected at one arm by a link 46 to the lever part 41 and at the opposite arm to an upright 47 secured to a bar 48 comprised in the platen shifting frame. As is well known the devices just described operate to maintain the two parts of the operating lever in normal position and to vary such normal relationship automatically when the platen is shifted. At printing operation the lever parts 41 and 42 operate as a single member or lever, being vibrated on the abutment 44 to raise the vibrator and cause the ribbon to cover the printing point. The vibration of the lever 41, 42 is effected through a stud 49 which cooperates with a slot 50 in the lever part 42, said stud projecting laterally from the top of a link 51 pivotally connected at its lower end to a crank arm 52 on the rock shaft 20.

By varying the position of the stud 49 in the slot 50 the extent of throw communicated to the vibrator may be varied. The means for shifting or resetting the stud comprises a slidable shift frame 54, the stud 49 engaging a slot 55 in said frame, said frame being controlled by devices comprising a lever 56 which connects the shift frame with a crank arm 57 fixed on a rock shaft 58, said rock shaft extending forward and being provided with a finger button or key 59. Said rock shaft also carries a second crank arm 60 having a pin and slot connection with a stop frame 61 slidably supported on the shift bar 48 by screw pins 62 and provided with

parallel upright arms 63 and 64 terminating at the top in forwardly bent portions or stops 65 and 66. Said stops are adapted to cooperate with the head of the screw pin 40 to positively limit the upward throw of the vibrator. It will be understood that the stop frame shifts automatically with the link 51 and actuating device or stud 49 so that when the link 51 is set as in Fig. 2 to give the short throw to the operating lever and the vibrator, the lower stop 65 will be in position to arrest said vibrator at the end of its throw; while in Fig. 3 the link has been shifted so that it is set to give the long throw to the operating lever and vibrator; and the stop frame 61 has been correspondingly shifted so that the lower stop 65 has been rendered inoperative and the high stop 66 has been shifted or set in place to intercept the cooperating pin 40 and so arrest the vibrator at the end of its long throw. Fig. 2 shows the normal position of the parts but it will be understood that when the ribbon is vibrated by the parts as in Fig. 2, said ribbon will be arrested when its upper printing field *a* has been brought opposite the printing point, designated as *p*. Fig. 3 shows the abnormal or printing position of the parts and it will be seen that the lower ribbon field *b* is covering the printing point. The parts above described are found substantially in the No. 10 Remington machine. The stop frame 61 and its connections are the invention of another and are not claimed *per se* by me.

It will be apparent that the ribbon vibrator must be raised high enough to present the ribbon opposite the printing point when each and all of the type bars including the type bar 34^a connected with the accent key 29 are operated. Accordingly the accent key must depress the universal bar far enough to lift the ribbon to operative position. In the absence of some special provision the other keys would, of course, since they depress the universal bar to a greater extent than does the accent key lever, throw the vibrator higher than or beyond the proper printing position. To prevent such defective operation I provide a special connection between the operating lever and the vibrator which replaces the rigid fork at the end of the lever part 41, which rigid fork was adapted to loosely embrace the stem of the headed pin 40. As shown in Figs. 2 and 3 only the upper prong or tine 67 of said fork is retained. This prong 67 normally engages with the top of the stem of the pin 40 and is retained pressed thereagainst by a hair pin spring 68 arranged beneath the lever part 41, which hair pin spring is in effect a yielding prong or finger and replaces the prior rigid underlying tine or prong providing a yielding connection between the vibrator and the operating lever.

The construction and mounting of the spring or yielding device 68 is best disclosed in Figs. 4 and 5. The spring is housed in a trough or box-like device 69. Said trough-like housing is preferably made of sheet metal bent to U-shape. The sides of the housing embrace the lever part 41 which is rectangular in cross section and are secured thereto as by pins or rivets 70. The bottom of the housing is some distance below the bottom of the lever part 41 and said lever part coöperates with the housing to provide a space or opening 71 in which the spring 68 is arranged. As appears clearly in Fig. 5 the spring is U-shaped and after extending laterally from the pin 40 under the lever part 41, is thence bent oppositely so as to form a U and its lower terminal portion 68^a is bent downward, passing through a hole 72 in the bottom of the trough, thus preventing accidental displacement of the spring 68.

The construction is such that normally the spring coöperates with the under side of the shank or stem of the pin 40 to maintain the prong 67 in engagement with the upper side of said shank as shown in Fig. 2. The parts are so adjusted that when the accent key lever 29 is operated the ribbon operating lever 41, 42 will be vibrated to an extent which will bring the head of the stop pin 40 into engagement with that one of the frame stops 65 and 66 which happens to be operative at the time, but without flexing the spring 68 to any material extent. When, however, any of the printing keys 24 are operated they will, owing to the greater depression imparted to the universal bar 23, raise the pin 40 into engagement with the operative frame stop so as to arrest the vibrator; but the operating lever part 41 will continue its upward movement after the arrest of the vibrator, the additional movement being permitted by the spring 68 which will be flexed as indicated in Fig. 3, so as to increase the space between the spring or flexible tine 68 and the rigid tine or prong 67 and will permit the rigid tine or prong 67 to rise out of engagement with the pin 40 as shown. The pin 40 it will be seen is embraced by a slot having a yielding side 68.

My present invention provides a simple and efficacious way of enabling the "dead" or accent key to be employed without alteration of or addition to the regular equipment of the machine other than the employment of a small number of inexpensive and readily applied parts.

Various changes may be made without departing from my invention.

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

1. In a typewriting machine, the combination of a ribbon vibrator, actuating devices therefor including an operating lever,

and connections between the vibrator and the operating lever, said connections comprising a pin on the vibrator and a spring finger on the operating lever engaging said pin and operative to permit the operating lever to advance beyond the ribbon vibrator.

2. In a typewriting machine, the combination of a ribbon vibrator, actuating devices therefor including an operating lever, and a pin and slot connection between the vibrator and the operating lever, the sides of the slot normally closely embracing the pin and one of the sides of the slot being yielding.

3. In a typewriting machine, the combination of a ribbon vibrator, a stop device therefor, actuating devices for said vibrator including a lever, and connections between said lever and said vibrator, said connections comprising a pin on the vibrator, and a hair-pin spring on said lever.

4. In a typewriting machine, the combination of a ribbon vibrator, a stop device therefor, actuating devices for said vibrator including a lever, and connections between said lever and said vibrator, said connections comprising a pin on the vibrator, and a hair-pin spring on said lever, said pin co-acting with said stop device.

5. In a typewriting machine, the combination of a ribbon vibrator, a stop therefor, actuating devices for said vibrator including a lever, connections between said lever and said vibrator comprising a pin on the vibrator and a hair-pin spring on said lever, and a U-shaped housing for said spring secured to said operating lever.

6. In a typewriting machine, the combination of a ribbon vibrator, stop devices therefor, actuating devices for said vibrator comprising a spring, said spring underlying a pin on said vibrator, key levers for actuating said vibrator far enough to bring said stop devices into operation and flex said spring, and a special key lever operative to actuate said vibrator to bring said stop devices into co-action but without materially flexing said spring.

7. In a typewriting machine, the combination of a ribbon vibrator, stop devices therefor, actuating devices for said vibrator comprising a spring, said spring underlying a pin on said vibrator, key levers for actuating said vibrator far enough to bring certain of said stop devices into operation and flex said spring, a special key lever operative to actuate said vibrator to bring said certain of said stop devices into co-action but without materially flexing said spring, and means for varying said actuating and stop devices to bring different stops into co-operative relationship with said pin, the action of said spring however being unaffected by such variation.

8. In a typewriting machine, the combi-

nation of a platen carrier, escapement devices therefor comprising two normally engaged escapement elements, a universal bar, connections between said universal bar and one of said escapement elements, printing key levers operative on said universal bar to disconnect said elements and operate the escapement devices, a ribbon vibrator, connections between said vibrator and universal bar, and a special key lever adjusted to have a greater lost motion with respect to said universal bar than said printing key levers have and operative on said universal bar to move said vibrator to the printing point but inoperative to disconnect said normally engaged escapement elements.

9. In a typewriting machine, the combination of a platen carrier, escapement devices therefor comprising two normally engaged escapement elements, a universal bar, connections between said universal bar and one of said escapement elements, a ribbon vibrator, arresting devices therefor, actuating devices for said vibrator connected with the universal bar, certain of said actuating devices being yieldingly connected to said vibrator, key levers for operating said escapement devices and said vibrator at printing operation, and a special key lever adjusted to have a greater lost motion with respect to said universal bar than said printing key levers have and operative on said vibrator to move the ribbon to the printing point but inoperative on said escapement

devices to disconnect said normally engaged escapement devices.

10. In a typewriting machine, the combination of a platen carrier, escapement devices therefor comprising two normally engaged escapement elements, a universal bar, connections between said universal bar and one of said escapement elements, a ribbon vibrator, arresting devices therefor, actuating devices for said vibrator connected with the universal bar, certain of said actuating devices being yieldingly connected to said vibrator, key levers for operating said escapement devices and said vibrator at printing operation, a special key lever operative through said universal bar on said vibrator to move the ribbon to the printing point but inoperative to disconnect said normally engaged escapement elements, and adjustable contacts on said key levers and on said special key lever for cooperation with said universal bar, the contact on said special key lever being adjusted to give a greater lost motion with respect to the universal bar than the contacts on the other key levers give.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 25th day of January, A. D. 1911.

ARTHUR W. SMITH.

Witnesses:

M. F. HANNWEBER,
L. NELSON.