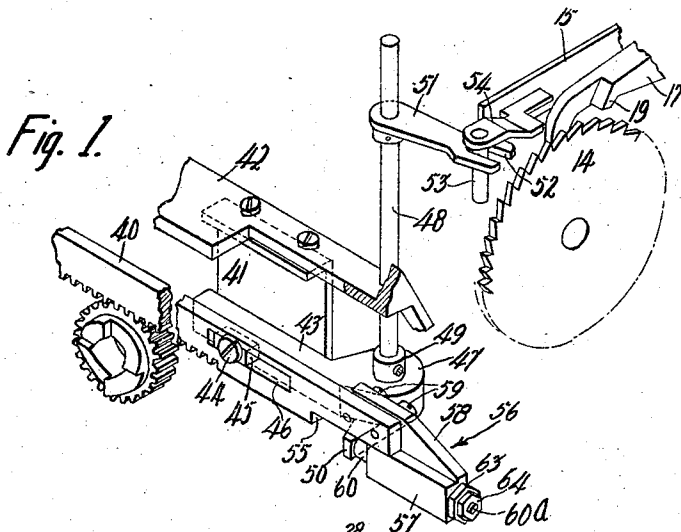
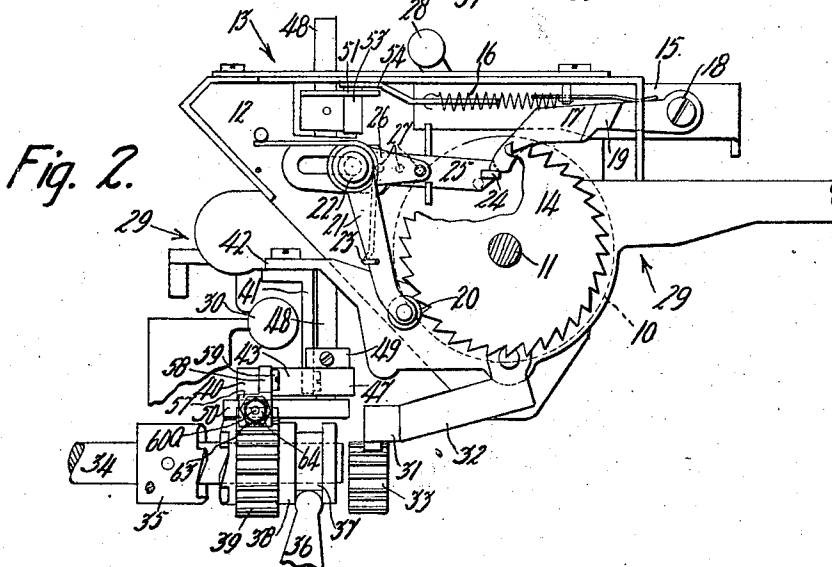
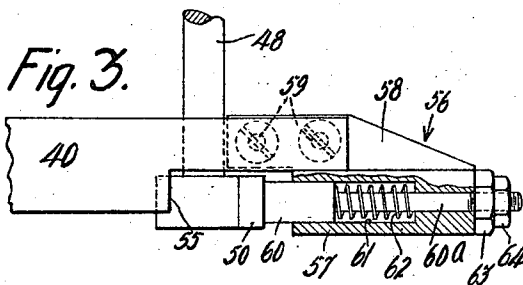


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A. G. KUPETZ
TYPEWRITING MACHINE
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UNITED STATES PATENT OFFICE.

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TYPEWRITING MACHINE.

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This invention relates to typewriting machines, and more particularly to line-spacing means designed to assure proper actuation of the platen when the line-spacing mechanism is actuated rapidly.

In the Underwood Standard typewriting machine, line-spacing of the platen is effected by means of a line-space pawl engaging a ratchet-wheel connected with the platen, and the extent of the line-spacing movement is determined by means of a shelf supporting the rearward end of the line-spacing pawl and movable forwardly and rearwardly by a setting lever to determine the initial engagement of the pawl with the ratchet-wheel. When single spacing is to be effected, the pawl is held in the highest of its three positions, and in its rearward movement strikes a ratchet-tooth near the top of the wheel, so that, especially in case the setting lever is positioned for a single-space operation of the platen, the pawl is especially liable to ride over the teeth of the ratchet-wheel when actuated rapidly. It has also been found that too rapid actuation of the platen may cause slippage between the platen and a work-sheet thereon, and consequently defective line-spacing of the work-sheet, even when the platen is line-spaced properly. It has been proposed to provide yielding means between the manual line-space handle and the pawl to prevent improper action of this kind. In certain machines, for example, the Underwood bookkeeping machine, it has been proposed to return the carriage by means of a motor, such action being effected, in certain forms of the machine, by a motor-driven pinion engaging a carriage-return rack on the carriage, and such carriage-return rack has been slidably connected with the carriage so that the line-space mechanism may be actuated thereby, prior to the carriage-return action, to actuate the pawl-carrying slide. In case of such motor-actuated return of the carriage, yieldable devices interposed between the manual line-space lever and the line-space pawl will be ineffective to prevent improper line-spacing by the motor-return mechanism.

An object of the present invention is to provide means to assure proper line-spacing of the platen during the return movement of the carriage, as, for example, when the carriage is returned by motor carriage-return means.

In the embodiment of the invention herein disclosed, means are provided whereby line-spacing of the platen may be effected in the usual Underwood manner by a manual manipulation of the line-space lever, or the line-spacing mechanism may be operated by a power-driven carriage-return mechanism at will, each form operating independently of the other.

To avoid too rapid actuation of the line-space pawl, provision is made of resilient means to cushion the action of the line-space rack on the line-space pawl, and, in the preferred form of the invention, such cushioning means is mounted on the end of the carriage-return rack, so that, upon movement of the carriage-return rack by its motor, the cushioning device will yield sufficiently to assure proper engagement of the line-space pawl with the ratchet-wheel and also to assure avoidance of slippage between the platen and a work-sheet thereon. The resistance of the cushioning means is insufficient to cause a line-spacing movement of the platen, and hence after the pawl is brought into engagement with the tooth of the ratchet during the initial return movement of the rack, the pawl is given sufficient time to become fully engaged with the ratchet-tooth, during the interval the cushioning element is being compressed to a fixed stop position by the continuous movement of the rack, when the pawl is picked up to complete the line-spacing movement. The pawl has a stop motion during the line-spacing movement and the interval of this stop motion is determined by the time required to compress the cushioning means.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a fragmentary perspective view, showing one form of the invention applied to so much of an Underwood standard typewriting machine as is necessary for the purpose of illustration.

Figure 2 is a diagrammatic side elevation of the machine with the invention applied thereto.

Figure 3 is a detail view, partly in section, showing the cushioning device mounted on the end of the carriage-return rack.

A platen 10 is supported by an axle 11 journaled in the ends 12 of a platen-frame 13, and the platen may be line-spaced by

means of a ratchet-wheel 14 fixed on the axle 11. Upon actuation of a line-space slide 15 against the action of a spring 16, a pawl 17, pivoted at 18, will be moved rearwardly to cause a tooth 19 thereon to engage one of the teeth of the ratchet 14 to turn the same, the ratchet-wheel 14 being held against accidental movement by means of a roll 20, pivoted on the rear end of an arm 21 swinging about a pivot 22 and urged toward the ratchet-wheel by means of a spring 23.

To determine the extent of actuation of the ratchet-wheel 14, the forward end of the pawl 17 is normally supported by a shelf or lug 24 on a bar 25, slidably mounted on the pivot 22 and yieldably held in any one of three positions by means of a spring-detent 26 co-operating with depressions 27 in the bar 25, the position of the bar 25 being determined by a line-space-setting handle 28 and serving to determine single-space, double-space and triple-space actuation by the pawl. As shown in Figure 2, the line-space mechanism is set for single-space actuation.

The platen-frame 13 is mounted in a carriage 29 slidable transversely of the machine on a rear rail 30 mounted on the machine-frame. The carriage is urged in a letter-feeding direction by a spring-drum, not shown, and is normally held against such movement by a rack 31 on arms 32 pivoted on the carriage, the rack 31 being normally in mesh with a pinion 33 forming part of the usual escapement mechanism.

For returning the carriage, provision may be made, in addition to the usual line-space and carriage-return lever (not shown), of motor-actuated carriage-return mechanism, one form of which is disclosed in the patent to F. A. Hart, No. 1,238,908, dated September 4, 1917. As herein disclosed, the motor (not shown), when set into operation, rotates a clutch-shaft 34 on which is fixed a clutch-member 35; and at the same time an arm 36, projecting into a groove 37 in a clutch-member 38 loosely mounted on the shaft 34, is shifted to move the member 38 rearwardly into effective engagement with the clutch-member 35. Mounted on the clutch-member 38 is a broad pinion 39 meshing with a rack 40 connected with the carriage 29, so that actuation of the pinion 39 acts to return the carriage to position for beginning another writing line.

The rack 40 is slidably mounted on the carriage, the mounting at one end being shown in Figure 1. As shown in said figure, a bracket 41 depends from a cross member or bar 42 of the carriage, and has secured thereto a block or member 43, on the front face of which is fastened by suitable means, such as a screw 44, a block 45 fitting into a slot 46 in the rack 40.

At its outer end the block or member 43

is provided with an enlarged end 47, in which is journaled a vertical shaft 48 held against downward movement through portion 47 by means of a collar 49. Secured on the shaft 48, at the lower side of the portion 47, is a rearwardly-extending arm 50 to be actuated by said rack, the connection being such that the arm 50 may be actuated independently of the rack 40, but actuation of the rack in a carriage-return direction operates the arm 50 and thereby rocks the shaft 48. Fixed on the shaft 48, above the cross-member 42, is an arm 51 having at its outer end a slot 52 into which projects a vertical pin 53 fixed in a rearward extension 54 of the line-space slide 15. It will be seen that, upon actuation of the carriage-return rack 40, the line-space slide 15 is drawn rearwardly and the platen 10 is line-spaced at the beginning of the carriage-return movement.

In connection with the motor-actuated return of the carriage, the movement of the latter is quite rapid, and, as the slide 15 moves rearwardly, the tooth 19, even if it strikes a tooth of the ratchet-wheel 14, tends to ride over the same, and to make the line-spacing action uncertain. Such failure is especially liable to occur when the line-space-setting handle 28 is in its rearward position for single-spacing. According to one form of the present invention, the undesirable result just referred to is avoided by providing suitable cushioning means between the carriage-return rack 40 and the arm 50.

As herein disclosed, the rack 40 is provided with a cutout 55 into which the arm 50 projects, and provision is made of a member 56 having a portion 57, at the outer end of the cutout 55, and a flange 58 extending upwardly at the rear of the rack 40 and secured thereto by suitable means, such as screws 59. Obviously the member 56 may be made integral with the rack 40, if desired. Preferably the arm 50 is operated by a plunger 60 fitting into an opening 61 in the portion 57 and having a reduced stem 60^a passing through the portion 57 to the outer end thereof, the plunger 60 being urged to the left, as seen in Figure 3, by a spring 62 and being limited in its movement to the left by suitable means, such as a nut 63 and a lock-nut 64. It will be evident that, by means of the nuts 63 and 64, the normal position of the plunger 60 relative to the rack 40 may be varied to obtain the proper relation between the plunger 60 and the arm 50 to assure uniform line-spacing action of the platen.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, in combi-

nation, a platen, a carriage therefor, a device for line-spacing a work-sheet on the platen, and carriage-return means including a rack having a lost-motion connection 5 with the carriage and means actuatable by said rack in its lost-motion movement to actuate said line-space device, said line-space device including cushioning means for easing the line-space action to assure proper line-spacing of the work-sheet. 10

2. In a typewriting machine, in combination, a revoluble platen, a carriage therefor, a carriage-return rack having a lost-motion connection with the carriage, and line-space 15 mechanism for the platen including a swingable arm adjacent said rack, a projection extending from said rack across the path of said arm, and a spring-pressed plunger mounted on said projection to engage said 20 arm and to cushion the actuation of the line-space mechanism to assure proper line-spacing of the platen.

3. In a typewriting machine, in combination, a revoluble platen, a carriage therefor, 25 a carriage-return rack having a lost-motion connection with the carriage, and line-space mechanism for the platen including a swingable arm adjacent said rack, a projection extending from said rack across the path 30 of said arm, and a spring-pressed adjustable plunger mounted on said projection to engage said arm to delay the actuation of the line-space mechanism and to assure positive line-spacing of the platen.

35 4. In a typewriting machine, in combination, a revoluble platen, a carriage therefor, a line-space wheel connected with said platen, a pawl to actuate said wheel, a carrier on which said pawl is pivoted, a carriage-return rack slidable on said carriage to 40 permit a limited free movement of said rack before the same becomes effective on the carriage, and a spring-pressed plunger between said carriage-return rack and the 45 pawl-carrier to effect line-spacing of the platen due to the movement of the rack relative to the carriage.

5. In a typewriting machine, in combination, a platen, a carriage therefor, a ratchet-wheel connected with the platen, a pawl to 50

actuate said ratchet-wheel, a pawl-actuating member, a carriage-return mechanism including a power driven rack mounted on said carriage for a free initial movement before effecting the carriage-return, and intermediate connection between the carriage-return 55 rack and the pawl-actuating member including a cushion device to effect a premature actuation of said pawl to a ratchet-tooth position before the cushioning device becomes 60 effective to delay the line-spacing operation.

6. In a typewriting machine, in combination, a platen, a carriage therefor, a ratchet-wheel connected with the platen, a pawl to 65 actuate said ratchet-wheel, a pawl-actuating member, a carriage-return mechanism including a power-driven rack mounted on said carriage for a free initial movement before effecting the carriage-return, intermediate 70 connections between the carriage-return rack and the pawl-actuating member including a cushion device to effect a cushioned actuation of said pawl to prevent the pawl from riding over the teeth of said ratchet-wheel, and adjusting means to vary the effect 75 of said cushion device.

7. In a typewriting machine, in combination, a revoluble platen, a carriage therefor, a device to line-space the platen, a carriage-return mechanism including a power-driven 80 rack having a lost-motion connection with the carriage, and a spring device, tensioned by the carriage-return rack during its idle movement with respect to the carriage, to actuate the line-space device and by its 85 cushioning effect assure correct line-feeding of a work-sheet on the platen.

8. In a typewriting machine, in combination, a platen, a carriage therefor, carriage-return means including a bar having lost 90 motion on the carriage and provided with a spring-supported abutment, and means for line-spacing the platen comprising an arm against which said abutment is pressed during the lost-motion movement of the bar, the 95 spring-supported abutment serving to actuate the line-spacing means more slowly than would be the case if the line-spacing means were acted upon directly by said bar.

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