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(Under International Convention.)

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Date of Application (in the United Kingdom), 22nd Aug., 1914

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Accepted, 15th Apr., 1915

COMPLETE SPECIFICATION.

Carriage Release Mechanism for Typewriting Machines.

I, THERON LORENZO KNAPP, Mechanician, 217, Jefferson Street, City of Woodstock, County of McHenry, State of Illinois, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to means for effecting the release of the paper carriage from the letter-spacing mechanism in typewriting machines of that class having letter-spacing mechanism which includes rack-teeth on the carriage frame, and an oscillatable escape-wheel shaft provided with a gear-pinion engaging the said rack-teeth, said shaft being movable toward and away from the carriage respectively to engage or disengage said gear-pinion and rack-teeth.

Such mechanism is provided in the "Oliver" typewriting machine, and the invention is herein shown as applied to a machine of this make. It is to be understood, however, that the invention is not limited to this particular application.

The object of the invention is to provide a generally improved form of carriage release mechanism of the foregoing character.

The invention consists in the carriage release mechanism having an oscillatable escape-wheel shaft carrying at one end a pinion adapted to engage a rack bar on the paper carriage, said shaft at its other end being mounted in a bearing member pivotally carried in a fixed support in a manner to allow swinging movement of the bearing member about an axis transverse to the plane of oscillation of said shaft.

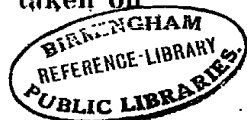
The invention also consists in the improvements in release mechanism for the paper carriages of typewriting machines substantially as hereinafter described.

In the accompanying drawings illustrating my invention;

Figure 1 is a view in side elevation, with parts in vertical section, of the portion of the typewriting machine to which the invention relates;

Figure 2 is a plan view of the same, with parts in horizontal section taken on line 2—2 of Figure 1;

[Price 6d.]



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Figure 3 is a view in front elevation of the parts shown in Figures 1 and 2;
 Figure 4 is a cross-section of the bracket on the shift-frame, taken on line 4—4 of Figure 2;

Figure 5 is a vertical, longitudinal, detail sectional view, taken on line 5—5 of Figure 2;

Figure 6 is a detail section of the lower bearing of the escape-wheel shaft, taken on line 6—6 of Figure 1;

Figure 7 is a plan view of the bracket on the shift-frame, with other parts removed;

Figure 8 is a detail plan view of the stop-plate on the said bracket.

Said drawings show the main part 1 of the shift-frame, by which the paper-carriage is immediately supported. The paper-carriage has endwise or letter-space movement on said shift-frame, and said shift-frame has backward and forward movement on the machine frame to provide for shifting the platen in such manner as to bring the paper in position for receiving impressions from two or more types upon each type-bar of the machine. Said shift-frame is provided with a depending part or arm 2, and with a forwardly projecting bracket 3. The longitudinal front frame-member 4 of the paper-carriage, is provided on its front edge with a series of rack-teeth 5, which are engaged by a gear-pinion 6 attached to the upper end of an upright escape-wheel shaft 7, located forward of the shift-frame. Said shaft 7 has, at its lower end, an escape-wheel 8 which constitutes a part of the escape mechanism which is operated by the universal bar of the machine and by which is controlled the endwise or letter-space movement of the carriage under the action of its actuating spring. The escape-wheel shaft is supported, at its lower end, by a bracket member 9, which is attached to, and extends forward from, the depending arm 2 of the shift-frame. Said shaft, at its upper end, engages a bearing block 11, which is adapted to slide backwardly and forwardly in a guide slot formed in the upper end of the bracket 3. The bearing block 11 is held normally at the rearward limit of its movement by an expansively acting coiled spring 13 (Figures 2 and 5), applied between the outer face of said block and the outer end of the slot in the bracket 3. The release bar 14 of the carriage is arranged horizontally above the frame-bar 4 and is adapted to slide thereon in a horizontal plane. Said release bar is operated by the usual devices provided on the carriage for that purpose, and when said release bar is thrown forward it acts on the upper end of the escape-wheel shaft to throw the same outwardly or forwardly and thereby release the gear-pinion 6 from the rack-teeth 5, and thereby disconnect the carriage from the letter-spacing mechanism.

The drawings illustrate certain parts or features forming part of a column-stop or tabulating mechanism, as follows: The front frame member or rack-bar 4 of the paper-carriage is provided with a depending, longitudinal flange 16, provided at its lower edge with a plurality of notches. Mounted on said flange 16 are stop-members 17, one of which is shown in Figure 1, which are adjustable on said flange endwise of the carriage.

A key-actuated stop 20 is mounted on the shift-frame and is movable vertically to bring it into and out of the path of the stop-member 17 on the carriage. Said stop 20 is attached to the rear or inner end of a vertically swinging lever 21 pivoted on the bracket 3 of the shift-frame. A plate 22 is attached to the forward end of the bracket 3 and affords support for a horizontally arranged pivot-rod 23, constituting a journal or bearing for said lever 21. The lever 21 is provided with two rigid arms 24 and 25; the arm 24 constituting a forward extension of said lever and the arm 25 projecting upwardly from the pivotal axis thereof.

A key-lever 26, provided with a key 27, for operating the column-stop devices, is mounted on the pivot-rod 23 and projects forward from the bracket 3. Said key-lever is provided with a stud 28 which projects from the right-hand face thereof in position to engage the underside of the arm 24 on the lever 26. Said

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key-lever 26 is connected with the upwardly extending arm 25 of the lever 21 by means of a contractile, coiled spring 30 connected at one end with said arm 25 and at its opposite end with a stud 31 affixed to and projecting from the right-hand side of said key-lever. Said key-lever 26 is provided with a coiled lifting spring 32, by which its front end is held normally elevated; said lifting spring being connected at its lower end with the stud 31 and at its upper end with the bracket 3.

The key-lever 26 is provided at its rear or pivoted end with an upwardly extending rigid arm 36, the upper end of which engages a longitudinal slot formed in a connecting bar 37 on the upper end of the shaft 7; said slot being made long enough to afford a desired extent of lost motion between the key-lever and the said bar.

In the normal or elevated position of said key-lever 26, the upper end of its arm 36 stands in a position intermediate between the ends of the slot in the connecting bar 37, so as to leave said bar 37 free to be moved forwardly with the upper end of the escape-wheel shaft 7, when the latter is swung forwardly to disengage the pinion from the carriage rack-bar 4, as occurs in the operation of the release device on the paper-carriage. So far as described, the parts illustrated are constructed and operate in the same manner as in the "Oliver" typewriting machines as heretofore constructed.

In order to provide for the forward and backward swinging movement of the upper end of the escape-wheel shaft, a novel construction is provided in the bearing for the lower end of said shaft, as follows: A bearing member 10 is supported on the forward end of the bracket arm 9 on the shift-frame. The forward end of said bracket arm is bent downwardly to form a vertical depending arm 41. Attached to the front face of said arm is a supporting member, having the form of a block 42, on which the bearing-member 10 is pivotally supported in such manner as to turn or rotate on a horizontal, transverse axis. As shown, the block 42 is provided with an integral, depending arm 43, arranged parallel with and in contact with the arm 41, and secured thereto by screws. The pivotal connection between the bearing member 10 and the block 42 is formed by an integral cylindrical stud or journal 45 (Figure 6), which extends laterally from said bearing member 10 and is adapted to turn in a horizontal, cylindrical bore or bearing aperture formed in the block 42. The bearing member 10 is held in engagement with the block 42 by means of a screw 46 inserted in the end of the bearing stud 45, and provided with a head which overlaps and bears against the outer face of said block 42. The lower end of the escape-wheel shaft extends through and turns in a cylindrical bearing aperture formed in the bearing member 10. A screw 48 is inserted vertically into the lower end of the shaft, and is provided with a head which overlaps and bears against the bottom of the said bearing member. The shaft is provided, above the bearing 10, with a downwardly facing annular shoulder 49, which, with the head of the screw 48, serves to hold the shaft from vertical movement relatively to the said bearing member 10.

By reason of the pivotal or swinging connection thus provided between the bearing member 10 and the frame arm or member which supports the same, said bearing member is free to oscillate about its horizontal axis when the upper end of the escape-wheel shaft is swung or moved forwardly and backwardly, so that the said bearing member is maintained always in axial alignment with said shaft and the frictional resistance to the turning of the shaft in the bearing member will be the same in all positions of the shaft.

The bracket 3 is provided with a stop-plate 50 forming stops adapted to act on the bearing block 11 for limiting the movement of the upper end of the escape-wheel shaft and the gear-pinion toward and from the rack-bar. Said stop-plate is provided with a forward transverse arm 51 acting as a front-stop, and with a rear transverse arm 52 acting as a rear stop, for the bearing block 11. As shown, said stop-plate is arranged horizontally on the top face of the bracket 12, and is secured thereto by two screws 53, 53, inserted vertically through the main

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part of the plate, which extends from front to rear of the bracket at one side of the escape-wheel shaft.

The forward stop-arm 51 of said stop-plate acts as a stop to arrest the movement of the escape-wheel shaft when drawn forwardly in the operation of the key-lever 26. Said arm 51 is shown as provided with two rearwardly extending lugs 55^a, 55^b, for contact with the front face of the bearing block 11. The rear arm 52 of said plate acts as a stop to arrest the rearward movement of the said shaft under the action of the spring 13. Said rear arm is made narrow from front to rear and is adapted to be bent at its free or right-hand end, backwardly or forwardly, in order to provide accurate adjustment thereof with respect to the bracket. The stop-plate 50 is secured to the bracket in such position that its forward stop arm 51 will properly limit the forward movement of the gear-pinion when the key-lever 26 is depressed. By bending the rear arm 52 forwardly or backwardly, the rearward position of the gear-pinion may be accurately determined, at the time its teeth are in engagement with those of the carriage rack-bar. The rear arm 52 is so adjusted as to prevent the said rack-bar and the carriage being subject to the rearward pressure of the pinion, due to the action of the spring 13, which throws the bearing block 11 rearwardly; it being found that the pinion engages and acts on the carriage rack-bar more smoothly, uniformly, and with less friction and wear, when held from backward pressure against the rack-teeth and in proper operative position relatively to the said teeth by the rear stop arm.

As hereinbefore stated, the lifting spring 32, for the key-lever 26, is connected at one end with the bracket 3. As a further improvement, an arm or standard 33, rising from the bracket 3, is provided for supporting the upper end of said spring 32. Said arm 33 is made in one piece, or integral with the stop-plate; said arm forming an extension of, and being bent upwardly from, the right-hand end of the forward stop-arm 51 of said stop-plate.

In the bracket 3, at the left-hand side of the slot therein, is inserted a screw-plug 55, the inner end of which forms a bearing surface to take the lateral pressure of the bearing block, which is pressed toward the left by the tension of the carriage-actuating spring, exerted through the carriage and rack-bar, on the gear-pinion. The said screw-plug is provided with a head, which bears against the outer face of the bracket, and accurately determines the position of the inner or bearing end of the plug; that is to say, the screw-plug 55 when screwed home, has its bearing end projecting through the bracket 3, thus retaining the block 11 in its correct position while reducing the friction arising from the movement of the said block. The front plate 22 of the bracket 3 is provided with a rearwardly extending, integral arm 56 (Figure 7), arranged at the left side of and at a short distance from the said bracket, and the screws 53, 53, which secure the stop-plate 50 to the bracket, are inserted through holes in said stop-plate and into the upper edge of said arm 56. By reason of this feature of construction, it is possible to locate the said screws at the left of the escape-wheel shaft, and in position in which they are readily accessible for the removal and replacement of the stop-plate. This construction also provides for the attachment of the stop-plate to the left-hand side of the bracket, without interference with the screw-plug 55.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a typewriting machine, carriage release mechanism having an oscillatable escape wheel shaft carrying at one end a pinion adapted to engage a rack bar on the paper carriage, said shaft at its other end being mounted in a bearing member pivotally carried in a fixed support in a manner to allow swinging movement of the bearing member about an axis transverse to the plane of oscillation of said shaft, substantially as described.

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2. Carriage release mechanism according to Claim 1, in which the escape wheel shaft is rotatably mounted in a bearing member having a laterally extending cylindrical stud rotatably mounted in the fixed support, substantially as described.

5 3. In a typewriting machine carriage release mechanism having an oscillatable escape wheel shaft mounted at one end in a bearing block slidably movable in a guide slot formed in a fixed bracket to which to one side of the said shaft is secured a stop plate having a laterally extending arm forming a back stop for the bearing block, said arm being bendable in the plane of the stop plate to
16 afford adjustment of the position of the back stop, substantially as described.

4. Carriage release mechanism according to Claim 3 in which the stop plate has a second laterally extending arm forming a front stop for the bearing block, substantially as described.

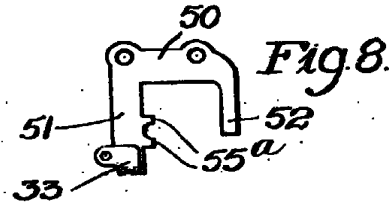
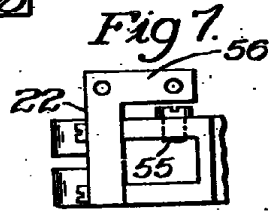
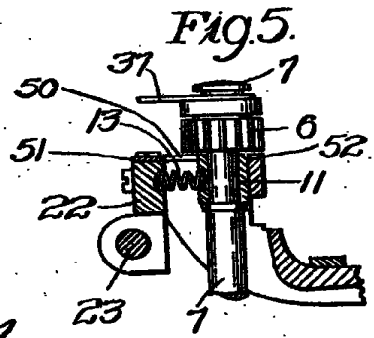
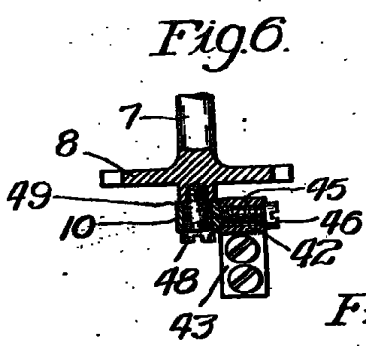
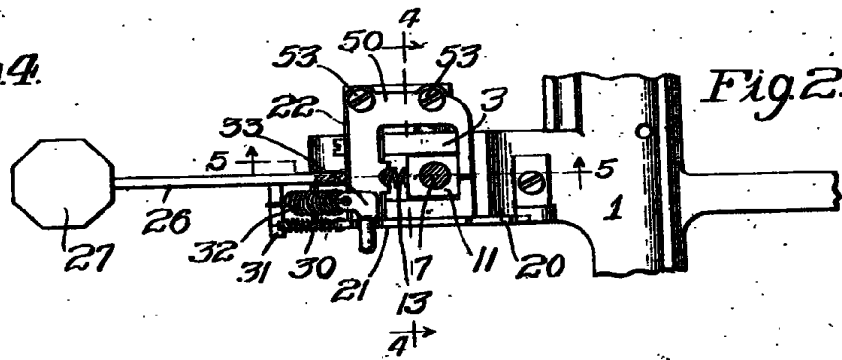
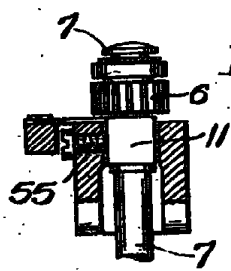
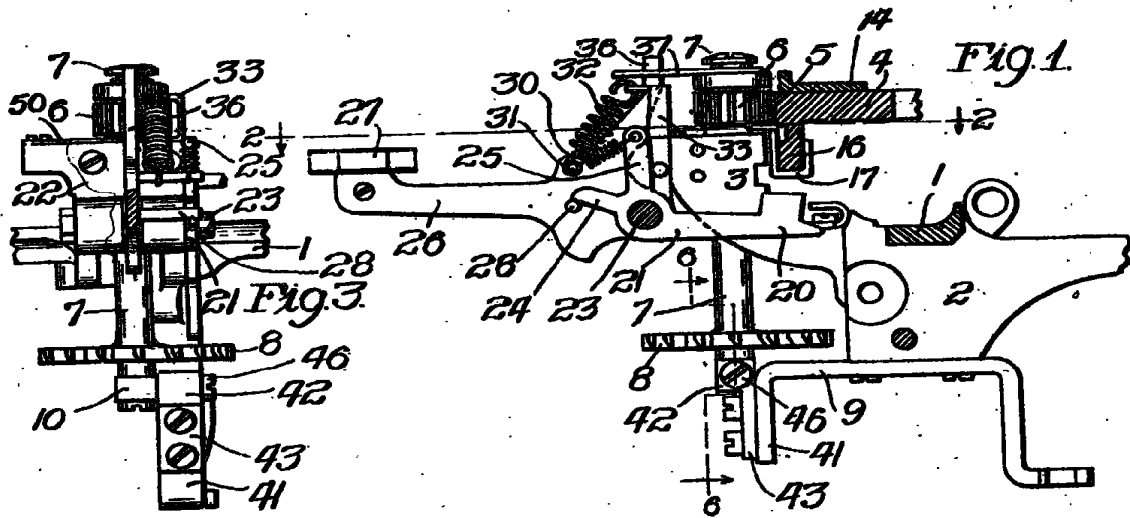
15 5. In a typewriting machine carriage release mechanism having an oscillatable escape wheel shaft carrying at one end a pinion adapted to engage a rack bar on the paper carriage in which mechanism said shaft is mounted and guided, substantially in the manner hereinbefore described with reference to the accompanying drawings.

Dated this 21st day of August, 1914.

MARKS & CLERK.

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[This Drawing is a reproduction of the Original on a reduced scale.]



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