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TYPEWRITING MACHINE

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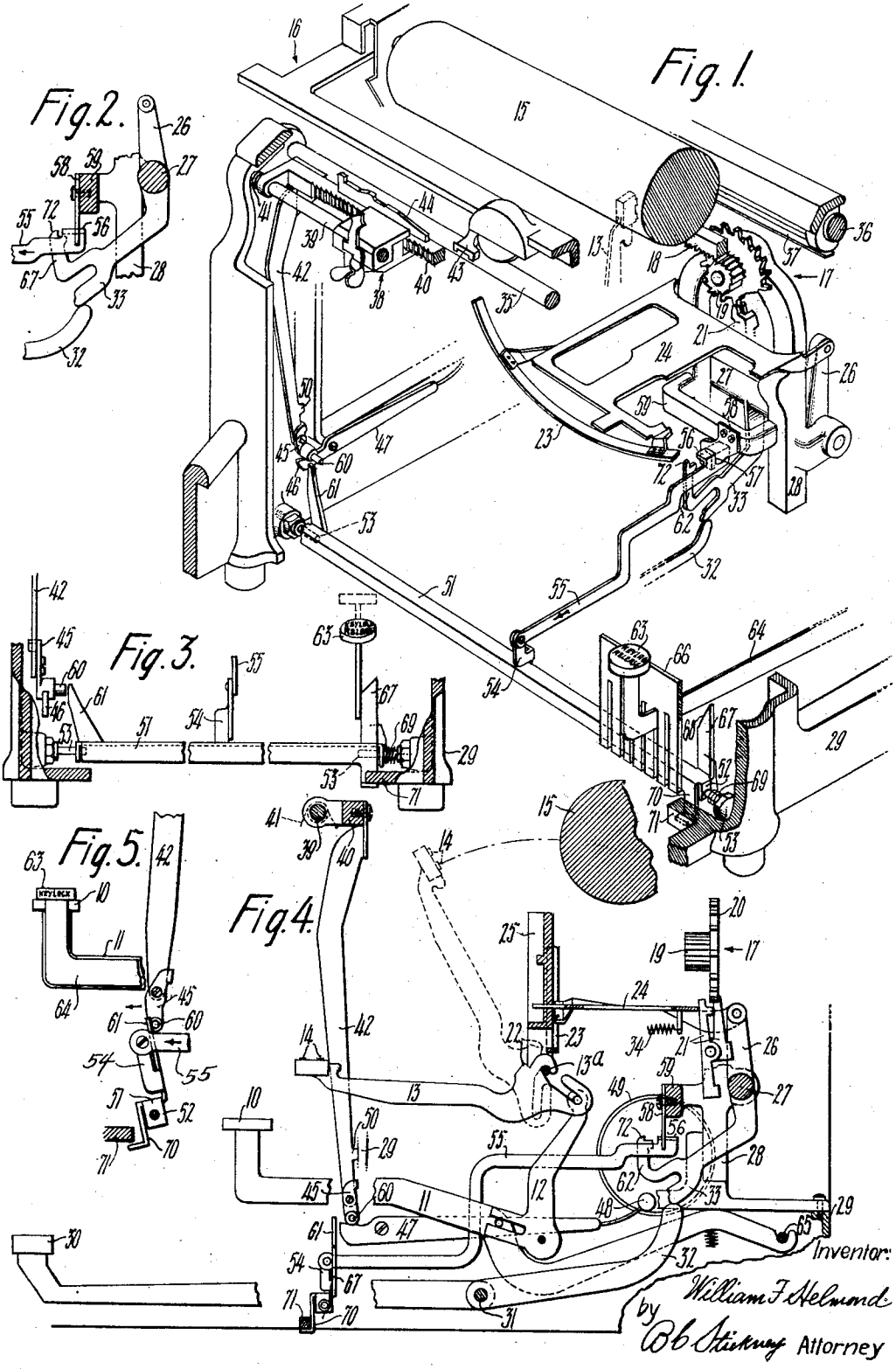

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TYPEWRITING MACHINE

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This invention relates to line-locking mechanism for typewriting machines.

According to the present improvements, the types are prevented from printing, when the carriage has reached the end of the typing line, by novel means which lock the escapement universal bar, to arrest the type-bars.

There is a reduction of noise of the locking mechanism. According to the present invention a cross-bar revolves slightly and noiselessly upon its pivot, when being moved to lock or release the type-bars. The cross-bar does not have to be aligned or adjusted in any way whatsoever, and all fine adjustments throughout the entire locking mechanism have been eliminated, thereby reducing the cost of manufacture, and also permitting any repair work or installation of the present invention to be easily made by any mechanic.

The traveling typewriter-carriage, while being fed near the end of its typing line, depresses a marginal rack-bar, and swings a downwardly-extending arm forward to operate a bell-ringing hammer.

There is reduction of the resistance offered to the carriage when operating the locking mechanism. This reduction is accomplished by eliminating the swinging movement of the cross-bar, and by so supporting the cross-bar that little pressure need be expended to operate the same.

The carriage depresses a margin-stop-rack, to rock a cross-bar that is supported on the side frames of the machine. A rearwardly-extending member is mounted, at one end, on said cross-bar and is slidably supported at its other end in a slot provided in a bracket mounted on the carriage-escapement frame. This member has a bent-over locking piece normally in ineffective position, but moves to effective position when the typewriter-carriage nears the end of its line.

The carriage operates to draw the rearwardly-extending member forward to hold the bent-over portion in the path of an oscillating arm which forms part of an escapement-mechanism, thereby preventing the escapement arm from oscillating, and so preventing operation of the universal bar to which the arm is fixed. This prevents the types from printing, and also prevents the operation of the usual space-bar. In this manner, a positive lock is provided for all speeds of operation of the machine.

This locking is assured because the universal bar is not operated until the type-key is at least half-way depressed and the type-bar is about an inch from the platen, so that ample time is given to the locking member to get into the path of said oscillating arm of the escapement-mechanism.

Other features and advantages will hereinafter appear.

In the accompany drawing,

Figure 1 is a perspective view of part of a typewriting machine, showing my invention applied thereto.

Figure 2 is a fragmentary side view of the rear portion of the key-locking mechanism shown in Figure 1, but shows the locking bar in its effective position.

Figure 3 is a fragmentary front elevation of Figure 1, showing the key-lock release-key operated, and the key-locking mechanism moved to ineffective position.

Figure 4 is a fragmentary sectional side elevation, showing parts of a typewriting machine together with my novel key-locking mechanism.

Figure 5 is a fragmentary side elevation, showing the front portion of the key-locking mechanism in operated position.

Type-keys 10 depress key-levers 11 to rock bell-cranks 12 to swing type-bars 13 upwardly and rearwardly about a fulcrum-rod 13a, to cause their types 14 to print against a platen 15, mounted in a carriage 16. The carriage-escapement-mechanism 17 includes a rack 18 hinged on carriage 16 and engaging a pinion 19, which is controlled by an escapement-wheel 20. The latter rotates under the control of a pair of feeding dogs 21, that are rocked at each operation of a type-key 10, by means of heels 22 on the type-bars 13, said heels engaging a universal bar 23 that is mounted on frame 24. The universal bar frame 24 is slidably supported at the front in a segment 25, and is mounted at its rear on upwardly-ex-

tending arms 26, rigidly mounted on rock-shaft 27, which is pivoted in an escapement-frame 28, fixed to the main frame 29 of the typewriting machine.

A space-bar 30, rigidly mounted on a shaft 31, operates escapement-mechanism 17 by means of a rearwardly-extending arm 32 fixed to the shaft 31 and engaging an arm 33 fixed to the universal bar-supporting shaft 27, which in turn is connected to universal bar 23. At each operation of a type-bar 13 the universal bar 23, through connections 24, 26 and 27, oscillates arm 33. This provides for feeding the Underwood ribbon-feeding mechanism shown in the patent to F. A. Young, 959,829, of May 31, 1910. The arm 33 and the universal bar 23 are returned by usual spring 34.

The carriage 16 runs upon a front rail 35 and rear rail 36, and is propelled by spring-drum and belt 37.

When the carriage 16 approaches the end of a line, it engages the usual left-hand margin-stop 38, adjustably supported on shaft 39, and held by a rack-bar 40 swinging on shaft 39. Spring 41, coiled around the shaft, holds rack 40 in upper normal position. From the rack-bar 40 extends downwardly an arm 42.

A tappet 43 fastened on the carriage 16 engages the usual compound cam 44, forming part of the margin-stop 38, to swing the rack-bar 40 downwardly and swing the arm 42 forwardly. A trip-member 45 engages a cam 46 formed on the forward end of a rearwardly-extending pivoted arm 47, to depress the same and cause a hammer 48 fastened to the rear end of the arm 47 to strike a usual bell 49.

The normal position of the arm 42 and the rack-bar 40 is determined by a lug 50 near the lower end of the arm 42 engaging the main typewriter-frame 29. The lug 50 is normally held against the frame 29 under the tension of spring 41.

Upon further letter-feeding movement of the carriage 16, the tappet 43 rides along the compound cam 44, thereby depressing still further the rack-bar 40, which in turn swings the arm 42 further forward, to cause the novel key-locking mechanism of my present invention to become effective.

This novel mechanism includes a cross-bar 51 provided at its ends with downwardly-extending supporting ears 52 for rotatably and slidably mounting the cross-bar 51 on screw-studs 53 fixed in the sides of the machine-frame 29. The cross-bar 51 has near its middle portion an upwardly-extending finger 54, to which the forward end of a rearwardly-extending locking bar 55 is mounted. The locking bar 55 is provided at its rear end with a bent-over projection 56 that is guided and supported in an L-shaped slot 57 formed in a bracket 58 mounted on a forward extension 59 of the escapement-frame 28.

During the forward movement of the arm 42, as above explained, a projecting pin 60 of the trip-member 45 engages an upwardly-extending arm 61 on the cross-bar 51 to rock the latter about its supporting studs 53, thereby moving the finger 54 and the bar 55 forward, sliding the projection 56 in its guiding slot 57 into the path of an upward extension 62 on the front of the oscillating arm 33 (Figure 2).

Should a type-key 10 be operated now, its corresponding type-bar 13, together with its types 14, will be swung upward towards the platen. Prior to the types 14 reaching the platen, the type-bar heel 22 will engage the universal bar 23 and tend to force the latter rearwardly to operate the escapement-dogs 21 and oscillate the ribbon-feeding arm 33. However, such rearward movement of the universal bar will be prevented, due to the projection 56 being in the path of oscillation of the extension 62 on the ribbon-feeding arm 33, so that the arm 33 is prevented from oscillating, which in turn prevents the universal bar from being moved rearwardly out of the path of the operated type-bar. In this manner, the universal bar 23 will arrest the swinging type-bar 13 before its types 14 reach the platen and thereby prevent printing from taking place. The arresting of the swinging type-bar 13 prevents its operated type-keys 10 from being fully depressed, and immediately calling the attention of the operator to the fact that the type-bar-locking mechanism has become effective.

Should the operator desire to type a few additional letters to finish an uncompleted word, a key-lock release-key 63 may be operated. The release-key 63 is mounted on a key-lever 64, which may be similar to the key-levers 11, and may be mounted at its rear on the same shaft 65 and in the same manner as the other key-levers 11. The key-lever 64 may be guided at the front in its vertical movement by a usual key-lever-guiding comb-plate 66. The release-key 63 is preferably positioned in the keyboard at the extreme right of the top bank of type-keys 10.

A bent-up arm 67 from the cross-bar 51 is provided at its top edge with a camming surface 68 that directly underlies the release-key-lever 64. The camming surface 68 is so formed that when the key-lever 64 is depressed, the arm 67 together with the bar 51 and arm 61, may be moved sidewise to the right, on their supporting studs 53, against the tension of a return spring 69, until the arm 61 clears the pin 60 (Figure 3).

The spring 69 is preferably wound upon the right-hand stud 53 between the ear 52 and the machine-frame 29, and has one end anchored in the frame 29, while its other end bears against the arm 67. It will be under-

stood that the spring 69 is wound to form a combined compression and torsional spring.

As soon as the arm 61 clears the pin 60, the torsional force of the spring 69 swings the bar 51 together with the arm 61, finger 54 and bar 55 rearwardly until a limiting stop 70 on the bar 51 abuts a projection 71 forming part of the machine-frame 29. The rearward movement of the bar 55 moves the projection 56 out of the path of the extension 62, and thereby permits the universal bar 23 to be operated again.

Upon release of the release-key 63, the compressed spring 69 will push the bar 51 leftwardly back to its normal position, wherein the arm 61 will be directly behind the pin 60. It will be understood that the bar 55 is provided with sufficient play or clearance at its supports to permit the sidewise movement of the bar 51.

Upon operation of one or two additional type-keys 10, the carriage 16 and the tappet 43 will again move toward the left, and the arm 42 and pin 60 are swung rearwardly by the spring 41. The construction of the trip-member 45 permits the pin 60 to ride over the top of the arm 61 and snap down behind it. The entire locking mechanism is now in its normal position.

Upon operation of a few more type-keys 10, the carriage reaches its final stop position, and the tappet 43 will again coact with the compound cam 44 in a similar manner as above described, to again move the key-locking mechanism to its effective position.

The projection 56 and the bar 51 are limited in their forward movements by a stop 72 on the extension 62 protruding into the path of the projection 56. It will be seen that by this means the forward rotation of the cross-bar 51 is limited, thereby preventing the spring 69 from becoming damaged, and also avoiding the projection 56 from slipping out of its supporting and guiding slot 57.

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 having a carriage and a key-operated universal bar, the combination of a locking member for said universal bar, a slidably mounted cross-bar, means to enable the carriage to rock the cross-bar and thereby move said locking member to effective position, a key having means for sliding said cross-bar lengthwise, and thereby release the cross-bar from the carriage, and a spring to restore the released cross-bar and the locking member to ineffective positions.

2. In a typewriting machine, the combination with a key-operated universal bar and a traveling carriage, of an arm rocked by the carriage, a cross-bar rocked by said arm, a locking slide moved by rocking of said cross-bar to position to effect locking of said universal bar, said cross-bar mounted for endwise movement, a release-key effective to move said cross-bar endwise and thereby release it from said carriage, and a spring to return said locking slide to its ineffective position.

3. In a typewriting machine, the combination with a traveling carriage and a key-operated universal bar, of a rocking bar mounted to slide, a locking member connected to said bar, means operated by said carriage to rock said bar and move said locking member to position to lock said universal bar, and means for moving said bar sidewise and restoring said locking member to its ineffective position.

4. In a typewriting machine, the combination with a traveling carriage and a key-operated universal bar, of a rocking cross-bar mounted to slide, a locking member connected to said cross-bar, means operated by said carriage to rock said cross-bar and thereby move said member to position to lock said universal bar, a cam for sliding said cross-bar endwise, and means cooperating with said cam and cross-bar to restore said locking member to its ineffective position.

5. In a typewriting machine, the combination with a traveling carriage and a key-operated universal bar, of a rocking cross-bar, a locking member connected to said cross-bar, means operated by said carriage to rock said cross-bar and move said member to position to lock said universal bar, said cross-bar mounted for endwise movement, and means for moving said cross-bar endwise and thereby effect the restoration of said locking member to its ineffective position, said means including a cam on said cross-bar and a key-lever overlying said cam, and effective upon depression to move said cross-bar endwise through engagement with said cam.

6. In a typewriting machine, the combination with a traveling carriage and a key-operated universal bar, of a rock-arm operated by the traveling carriage, a cross-bar mounted for rocking and endwise movements, a locking member connected to said cross-bar, means at one end of said cross-bar engaged by said rock-arm to rock said cross-bar and move said member to position to lock said universal bar, and means at the other end of said cross-bar to move said cross-bar endwise to effect the restoration of said locking member to its ineffective position.

7. In a typewriting machine, the combination with a traveling carriage, a key-operated universal bar, and an arm fixed to the universal bar to oscillate at each key-operation, of a rock-arm operated by the carriage, a rocking cross-bar rocked by said arm, a locking member connected at one end to said

cross-bar, and means at the other end of said locking member to guide the latter into locking engagement with said oscillating arm during the rocking of said cross-bar by said traveling carriage.

8. In a typewriting machine, the combination with a traveling carriage, a key-operated universal bar, and an arm fixed to the universal bar to oscillate at each key-operation, of a rock-arm operated by the carriage, a rocking cross-bar rocked by said arm, a locking member connected at one end to said cross-bar, a support at the other end of said locking member to guide the latter into locking engagement with said oscillating arm during the rocking of said cross-bar by said traveling carriage, and means on said oscillating arm to limit the forward movement of said locking member.

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