

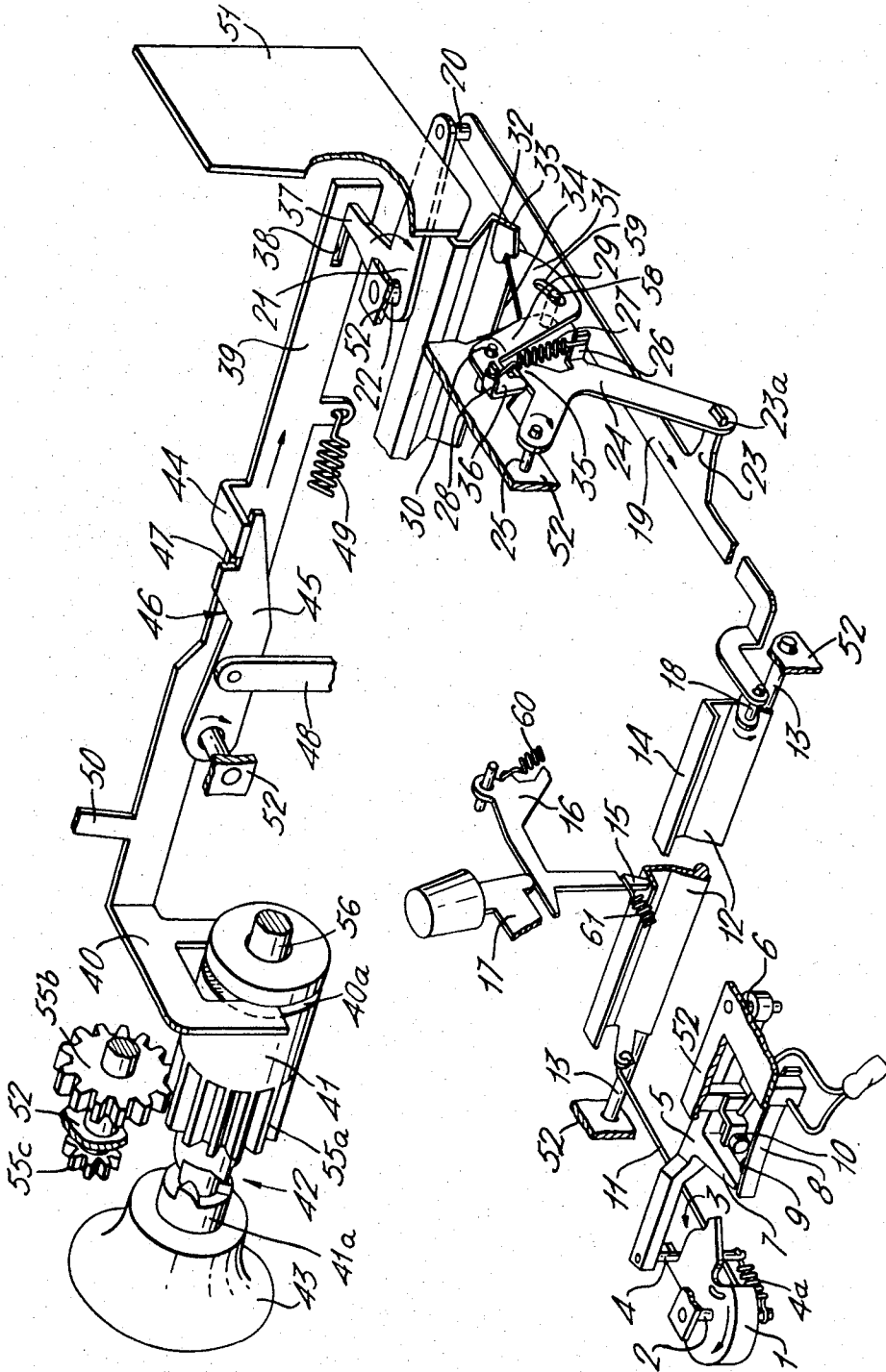
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DEVICE FOR LOCKING THE CARRIAGE OF AN ELECTRIC TYPEWRITER

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DEVICE FOR LOCKING THE CARRIAGE OF AN ELECTRIC TYPEWRITER

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4 Claims

ABSTRACT OF THE DISCLOSURE

A device for locking the carriage of an electric typewriter to protect against damage during transport operated by the manual movement of the typewriter motor control switch between the ON and OFF position. The carriage lock comprises a projection which cooperates with a recess in a carriage member to lock the carriage in the center position. Operating in conjunction with the carriage lock are a means for locking the typewriter keys to prevent depression thereof and a means for disengaging the drive motor from the carriage return mechanism.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to a device for locking the carriage of an electric typewriter.

As is well known, the carriages of typewriters, particularly of electric typewriters of the portable kind, can normally be locked in the central or rest position by means of manually-actuated devices of various design, in order to avoid the occurrence of damage during transport. These devices, although generally giving satisfactory results, require a direct intervention by the operator who, all too often, forgets to effect the carriage locking operation which should always precede any transport of the portable typewriter.

SUMMARY OF THE INVENTION

The object of the present invention is to avoid the above mentioned disadvantage, by arranging to lock the carriage each time the electric switch for feeding the current to the electric motor of the typewriter is opened.

According to the present invention there is provided an electric typewriter with a device for locking its carriage, comprising a switch for the motor of the typewriter, a manually operable control member for the switch having an ON position and an OFF position, and a mechanism so coupled to the control member as to urge a locking member resiliently against a part of the carriage when the control member is in the OFF position, the carriage part having a slot into which the locking member snaps when the carriage is then centered.

DESCRIPTION OF A PREFERRED EMBODIMENT

One particular embodiment of the invention will be described, by way of example, with reference to the accompanying drawing which shows, in perspective view, the components of the locking device, together with some other parts of the typewriter.

The electric typewriter embodying the present invention comprises a switch knob 1 which is pivoted by means of a pin 2 to the machine support or frame 52 and is provided with a cam portion 3 cooperating with a stud 4 which is integral with the end of a lever 5 pivotally mounted on the machine frame 52 by means of a pin 6. Stud 4 is biased into engagement with cam portion 3 by means of a spring 4a. A projection 7 of the lever 5 acts upon the end of a leaf spring 8 which carries a contact 9

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arranged for cooperating with a corresponding fixed contact 10 of an electric switch provided for feeding the current to the electric motor 43 of the typewriter. In the drawing, the switch knob 1 is shown in the position in which the contacts 9 and 10 are open. Upon actuation of the switch knob 1 in the direction opposite to that of the arrow shown in the drawing, the cam portion 3 is caused to rotate counterclockwise, thereby displacing the stud 4 and causing the lever 5 to pivot clockwise as viewed from above about the pin 6. The projection 7 of lever 5 withdraws from the leaf spring 8, allowing the contact 9 to touch the contact 10, thereby closing the motor switch 9, 10.

On the switch knob 1 is hinged one end of a tie rod 11, whose opposite end is pivotally mounted on a universal bar or bail 12 integral with a spindle 13, which is in turn pivoted in the typewriter support frame 52. The bail 12 is provided with a flat extension 14, which is adapted to be inserted beneath the ends 15 of a plurality of levers 16 which form part of the writing mechanism of the typewriter and which are acted upon directed by the plurality of keys 17 which comprise the keyboard. When the switch knob 1 is OFF, the flat extension 14 is pulled beneath the levers 16 to lock the keyboard by preventing the keys 17 from being depressed. Each lever 16 is biased away from the depressed position by springs 60 and 61.

On a crankpin 18, provided at one end of the bail 12, there is pivoted one end of a movable bar 19, whose other end is hinged to a pin 20 of a bell-crank lever 21, which is mounted for pivotal movement about a pin 22, in typewriter support frame 52, in a plane substantially parallel to the plane of movement of the bar 19.

A projection 23 of the bar 19 cooperates with a slot 23a in a lever 24 pivoted on a pin 25 fastened to the typewriter support frame 52. A lug 26 of the lever 24 is connected by means of a coil spring 27 to a corresponding lug 28 of a lever 29, which is also pivotally mounted on the typewriter frame 52 by means of a pin 30. A locking projection 31 of the lever 29 is arranged for entering into a slot 32 provided in a movable guide 33 of the carriage 51 of the typewriter.

The relative position of the pins 25 and 30 and of the lugs 26 and 28 of the levers 24 and 29 respectively is such that, when the lever 24 is pivoted in the direction indicated by the arrow in the drawing, i.e. when the machine is switched OFF, the spring 27 pulls the lever 29, tending to rotate it in the direction indicated by the arrow shown thereon, i.e. in a direction opposite to the direction of rotation of the lever 24. This urges locking projection 31 against the edge 34 of the movable guide 33. At this point, the device is set for effecting locking of the carriage 51; in fact, when the carriage 51 is brought in its central or rest position, locking projection 31 will slide on the edge 34 of the movable guide 33 and snap into the slot 32 to stably lock the carriage 51 of the typewriter in place. The movement of lever 29 is limited by a pin 58 mounted on frame 52 engaging a slot 59 in lever 29.

The levers 24 and 29 are further provided with other projections, 35 and 36 respectively, which come into contact when the locking projection part 31 has snapped inside the slot 32 of the movable guide 33, as shown in the drawing. When the switch knob 1 is turned back ON again, the lever 24 will be caused to rotate in the direction opposite to that indicated by the arrow and therefore the projection 35 will push on the projection 36 and turn back the lever 29 to withdraw locking projection 31 from the slot 32.

The locking device comprising the levers 24, 29 and the spring 27 therefore locks the movable guide 33 of the carriage 51 of the typewriter only when the carriage

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51 is brought to the central or rest position, where the locking projection 31 can enter the slot 32, when the switch knob 1 is brought to the OFF or locked position. Movable guide 33 is unlocked when the switch knob 1 is brought to the ON position.

One end 37 of the bell-crank lever 21 engages in a slot 38 in another slider 39, provided with a fork 40 which acts upon an annular groove 40a of a member 41 of a clutch 42 interposed between the electric motor 43 of the machine and transmission gears 55a, 55b, 55c which drive the return movement of the carriage 51 of the typewriter. In the locked position described above (to which the rotation of the bell-crank lever 21 in the direction indicated by the arrow corresponds), slider 39 will be displaced to the right, as shown in the drawing, and therefore the member 41 will be released from the other member 41a of the clutch 42, so that clutch 42 is disengaged. Clutch members 41 and 41a are advantageously mounted on a shaft 56.

The slider 39 is further provided with a lug 44 adapted to coact with a lever 45 which is pivotally mounted, at one end, on the typewriter support frame 52. During displacement of the slider 39 to the right, as seen in the drawing, the lug 44 will ride up a sloping edge 46 of the lever 45, subsequently snapping beyond a detent 47. Upon actuation of the return key (not shown) for the return movement of the carriage 51, a lever 45 is rotated in the direction indicated by the arrow by a tie rod 48 hinge thereon. The return key, not shown, is connected to the tie rod 48 in any suitable manner.

When the switch knob 1 is brought to the unlocked or ON position, the locking projection 31 will be released from the movable guide 33, as described above, and therefore the carriage 51 of the typewriter will be unlocked. However, due to the lug 44 cooperating with the detent 47 of the lever 45, the clutch 42 will not be engaged. Such engagement will take place only upon actuation of the return key (not shown) for the return movement of the carriage 51, i.e. when the lever 45 is caused to pivot in the direction of the arrow, thereby disengaging the detent 47 from the lug 44 and allowing the slider 39 to be displaced to the left, as seen in the drawing, under the action of a coil spring 49.

When the switch knob 1 is in the unlocked or ON position, the bell-crank lever 21 is free to rotate in the direction opposite to that of the arrow shown in the drawing, without acting upon the slider 39 on account of the lost motion with the elongated slot 38.

The slider 39 is further provided with a second lug 50 adapted to cooperate with the left-hand margin stop (not shown) of the carriage 51 of the typewriter by means of other levers, not shown. This extension 50 is adapted for disengaging the clutch 42 when the carriage 51 has reached the end of its return stroke and a new line of writing has to be started, whose starting position is determined, as is well known, by the left hand margin stop of the carriage 51.

Thus, during the normal writing cycle, the slider 39 is displaced in the direction of the arrow shown in the drawing, by the action of the left-hand margin stop of the carriage 51 each time a new line of writing is started, whereas the same slider 39 is displaced in the opposite direction by the action of the spring 49 every time, upon completion of each line of writing, the carriage return key is actuated, thereby releasing the lug 44 from the detent 47. At the end of the first displacement mentioned above, the clutch 42 will be left disengaged and from this moment the writing stage will start, during which the carriage 51 moves step by step under the action of the load spring. At the end of the second aforementioned displacement, closure of the clutch 42 will take place to start the return movement of the carriage 51, being driven by the electric motor 43.

The slider 39 can additionally be displaced in the direction of the arrow (locked position) by the action of the

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bell-crank lever 21 cooperating inside the slot 38. In fact, in this locked position, the clutch 42 must be disengaged to allow free movement of the carriage 51 so that it can be centered.

I claim:

1. In an electric typewriter having a transversely movable carriage, a guide movable with said carriage, a set of depressible typing keys, an electric motor, a motor control switch manually operated by means of a control member connected thereto movable between a motor ON position and a motor OFF position, a universal bar connected to said control member and engageable with said depressible keys when said control member is in said OFF position to lock said depressible keys against depression, a clutch for operatively coupling said carriage to said motor for a carriage return operation and movable between an engaged position wherein said motor is coupled to said carriage and a disengaged position wherein said motor is uncoupled from said carriage, and a shiftable member operatively connected to said clutch for moving said clutch between said engaged position and said disengaged position, the improvement comprising:

a recess in said movable guide,

a locking member transversely fixed with respect to said guide and movable substantially perpendicularly thereto between a locked position engaging said recess to lock said carriage against transverse movement and an unlocked position out of engagement with said recess, said locking member being biased toward said locked position,

spring means acting on said shiftable member to urge said clutch to said engaged position,

a pair of intermediate members, one of said intermediate members being connected to said shiftable member for operating said shiftable member and the others of said intermediate members being connected to said locking member for operating said locking member, and

a common member connected on the one hand to said universal bar and on the other hand to each of said pair of intermediate members for simultaneously operating said pair of intermediate members, whereby movement of said universal bar into engagement with said depressible keys when said control member is moved to said motor OFF position causes said shiftable member to move said clutch to said disengaged position and allows said biased locking member to move to said locked position.

2. An electric typewriter according to claim 1, wherein said one intermediate member is connected to said shiftable member by means of a lost motion connection, and further comprising a carriage return control means normally being in a first position engaging said shiftable member to hold said clutch in said disengaged position regardless of the action of said one intermediate member, said carriage return control means further being manually movable to a second position disengaged from said shiftable member whereby said clutch can move to said engaged position.

3. An electric typewriter according to claim 1 wherein said locking member comprises a first rockable lever, and said other intermediate member comprises a second rockable lever coplanar with said first rockable lever, and further comprising a tension spring connecting said levers and normally rocking said levers in opposite directions and into contact with each other.

4. An electric typewriter according to claim 1 wherein said shiftable member comprises a transverse slide and said common member comprises a link movable in a direction perpendicular to said slide; said one intermediate member comprising an L-shaped lever coplanar with said slide, said locking member and said other intermediate member comprising a pair of levers pivoting in a plane perpendicular to said L-shaped lever.

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