

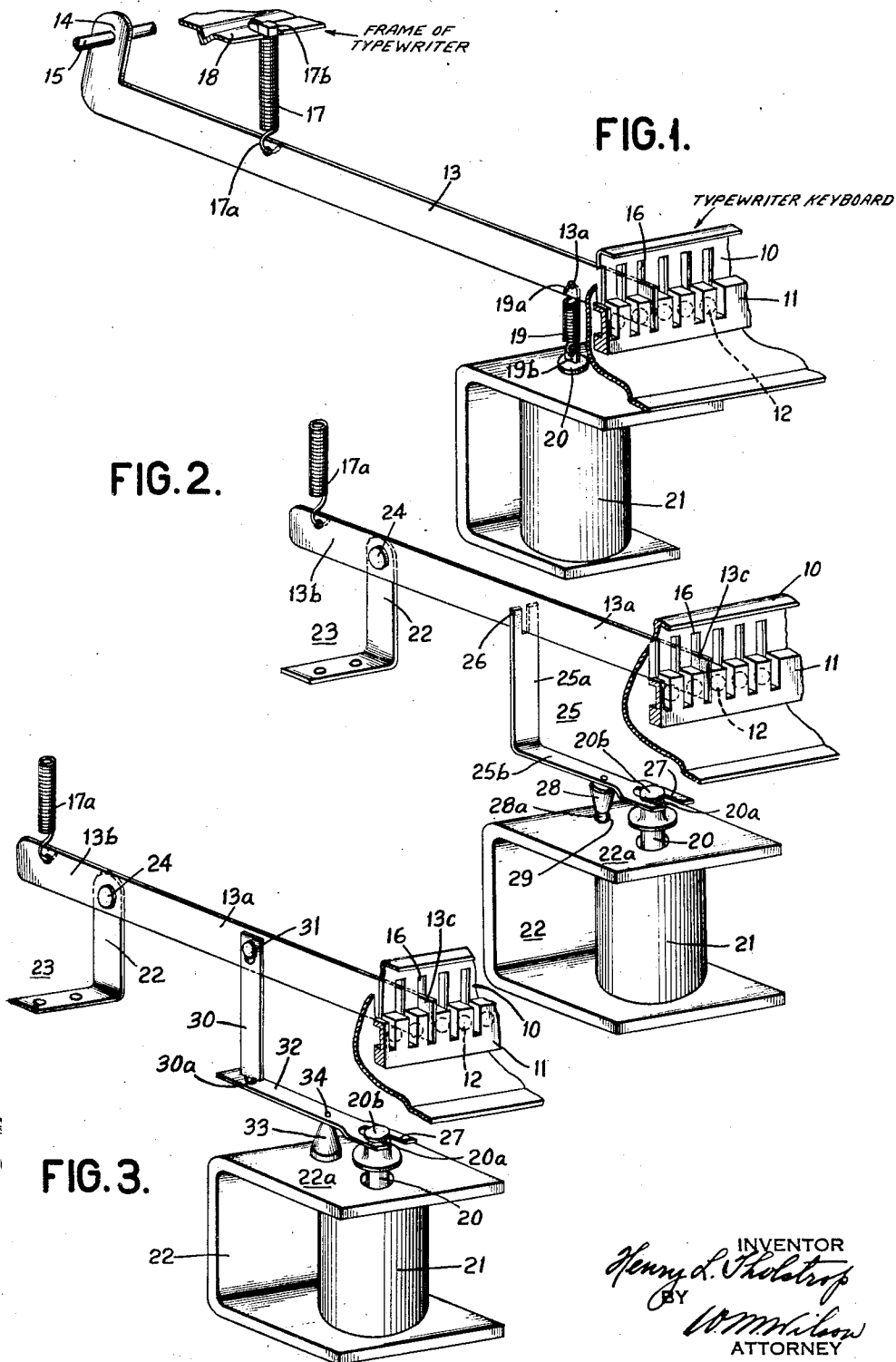
Sept. 2, 1941.

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2,255,030

KEYBOARD LOCKING DEVICE

Filed Oct. 5, 1939



UNITED STATES PATENT OFFICE

2,255,030

KEYBOARD LOCKING DEVICE

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Application October 5, 1939, Serial No. 298,005

15 Claims. (Cl. 197—107)

The present invention relates to locking systems and more particularly to a locking system for keyboards of typewriters or the like.

The invention embodies novel locking means whereby the keyboard of a typewriter or the like may be locked by a remote control or inversely whereby the keyboard of a typewriter or similar device may be unlocked by remote control.

More specifically the device embodying the invention is provided for the purpose of remotely controlling the locked or unlocked position of mechanism for locking the keyboard of a typewriter or similar devices.

Devices of the prior art have been provided whereby the keyboard of a typewriter was locked by the operation of a local control mechanism. Such devices, however, have been wholly unsuitable for remote control.

One of the objects of the present invention, therefore, is to provide a novel remotely controlled locking and unlocking mechanism for the keyboard of a typewriter.

Another object is to provide a remotely controlled locking and unlocking mechanism which shall be simple to construct and easily and positively operated.

Still another object is to provide a novel remote control for the locking mechanism of a typewriter keyboard whereby upon energization of a solenoid control the locking mechanism is placed in operative condition.

A further object is to provide a novel remote control for the locking mechanism of a typewriter keyboard whereby upon energization of a solenoid control the locking mechanism is placed in inoperative condition.

Still another object is to provide a novel remote control mechanism for a typewriter keyboard lock comprising a solenoid, and means controlled by said solenoid for actuating the locking mechanism.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawing, which discloses, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawing:

Fig. 1 is a fragmentary perspective view illustrating the essential elements only of one embodiment of the invention with the locking mechanism in the operative position.

Fig. 2 is a fragmentary perspective view illustrating the essential elements only of another

embodiment of the invention with the locking mechanism in operative position.

Fig. 3 is a fragmentary perspective view illustrating the essential elements only of an improvement of the invention as illustrated in Fig. 2.

In the drawing, the invention is shown in the present instance as applied to the keyboard of a typewriter but it is to be expressly understood that this is for illustrative purposes only and that the invention is not to be so limited but may be applied to locking means for any record making devices utilizing a keyboard or the like.

Referring to the drawing and more particularly to Fig. 1, a comb 10 is illustrated as indicative of the keyboard of a typewriter. Attached to the comb 10 is an interlocking mechanism comprising the interlock roller guide or race 11 provided, in a manner well known, with a series of interlocking rollers 12, one for each key lever plus one, these rollers being of such a diameter and so spaced that only one key lever or the locking lever only, can be pressed down between the rollers at any one time.

Novel means are now provided in addition to the normal keyboard whereby the locking mechanism may be remotely controlled. A locking lever 13 similar to a key lever of the typewriter keyboard is mounted by an opening 14 therein on the common key lever support rod 15 and is normally biased against the top of a guide slot 16 in the comb 10 by a coil spring 17 attached at one end 17a thereof to the locking lever 13, and at the other end 17b thereof to the frame 18.

A coil spring 19 having one end 19a thereof threaded through the opening 13a in lever 13, is connected at its other end to a lug 19b on the disc top of plunger 20 of solenoid 21 mounted in the U-shaped base 22. The energization of solenoid 21 is controlled by any suitable means (not shown) which may be operated from a remote point to secure remote control of the locking mechanism.

The operation of the device is as follows:

Upon energization of the solenoid 21, the plunger 20 is drawn downwardly as illustrated in Fig. 1, applying a force to the coil spring 19 whereby the locking lever 13 is rotated about the rod 15 as a pivot against the force of spring 17 and lever 13 is pulled downwardly to the bottom of guide slot 16 and between a pair of the rollers 12 whereby the interlock mechanism is converted to a key-locking mechanism and the normal key levers of the typewriter keyboard will remain locked as long as the solenoid 21 remains energized.

Referring to Fig. 2, there is illustrated therein another embodiment of the novel remote control mechanism, including a comb 10 as in Fig. 1, having attached thereto an interlock mechanism comprising the interlock roller guide or race 11 provided with a series of interlocking rollers 12.

Novel means are now provided whereby the locking mechanism may be remotely controlled. A locking lever 13a similar to a key lever of the typewriter keyboard is pivotally mounted on the arm 22 of support bracket 23 by the pivot screw 24. An extension 13b of the lever 13a extends beyond the pivot screw 24 and has attached thereto one end of a spiral spring 17a which constantly urges the extension 13b clockwise about the pivot screw 24 whereby the opposite end 13c of lever 13a is held against the bottom of the guide slot 16 in the comb 10.

Between the pivot screw 24 and the end 13c of lever 13a, there is connected an L-shaped lever 25 having forks formed at the extremities of the respective legs of the L-shaped lever. One of the forks 26 formed in the leg 25a of lever 25 embraces the sides of the lever 13a while the other fork 27 embraces a reduced portion 20a just below a disc 20b of disc top solenoid plunger 20. Attached to leg 25b of lever 25 is an inverted cone-shaped pivot 28 carrying at its lower end a rounded pin-shaped extension 28a mounted in an indentation 29 in the top plate 22a of the U-shaped base or support 22.

The operation of the device is as follows:

Upon energization of solenoid 21, plunger 20 is drawn downwardly, oscillating the L-shaped lever 25 in a clockwise direction about its pivot 28 thereby elevating the leg 25a thereof which in turn oscillates the locking lever 13a in a counterclockwise direction about the pivot screw 24 against the force of spring 17a to thereby elevate the end 13c of the lock lever to the top of guide slot 16 thereby converting the key-locking mechanism back to a straight interlocking mechanism. It is to be particularly noted that in this embodiment, the interlock mechanism is reconverted to its normal status upon the energization of solenoid 21 in contradistinction to the operation of the embodiment of Fig. 1. Upon deenergization of solenoid 21, coil spring 17a rotates the lever 13a in a clockwise direction about pivot screw 24 to depress leg 25a of lever 25 thereby oscillating said lever in a counterclockwise direction about its pivot 28 to lift the plunger 20 to its unoperated position as shown in Fig. 2 so that it is ready for the next cycle.

Referring to Fig. 3, there is illustrated therein a modification of the embodiment of Fig. 2. A comb 10 as in Figs. 1 and 2 has attached thereto an interlock mechanism comprising the interlock roller guide or race 11 provided with a series of interlocking rollers 12.

Novel means are now provided whereby the interlock mechanism may be remotely controlled to limit it to its ordinary function or to convert it to a key-locking mechanism comprising a locking lever 13a as in Fig. 2 pivotally mounted in the arm 22 of support bracket 23 by the pivot screw 24. An extension 13b of the lever 13a extends beyond the pivot screw 24 and has attached thereto one end of a spiral spring 17a which constantly urges the extension 13b in a clockwise direction about the pivot screw 24 whereby the opposite end 13c of lever 13a is pressed against the bottom of the guide slot 16 in the comb 10 between two adjacent rollers 12.

Between the pivot screw 24 and the end 13c of lever 13a, there is connected an L-shaped lever different than the L-shaped lever of the embodiment of Fig. 2 and comprising a link 30 connected at one end thereof to lever 13a by the pivot pin 31 and at the other end thereof to a link 32 by a peened-over pin connection 30a. Link 32 is pivotally mounted on a cone-shaped pivot 33 mounted on the top plate 22a of the support 22, the apex of said cone extending into an opening 34 formed in the link 32. The free end of link 32 is shaped to provide a fork 27 embracing a reduced portion 20a just below a disc 20b of disc top solenoid plunger 20, as in the embodiment of Fig. 2.

The operation of the device is as follows:

Upon energization of solenoid 21, the plunger 20 is drawn downwardly, rotating the link 32 clockwise about its pivot 33, thereby elevating the link 30 to oscillate lever 13a in a counterclockwise direction about pivot 24 against the force of spring 17a. The end 13c of lever 13a is thereby elevated to the top of guide slot 16 to thereby reconvert the interlock mechanism to its ordinary function.

Novel means are therefore provided whereby the locking mechanism of a typewriter keyboard or the like may be remotely controlled.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a plurality of modifications it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a remote control lock mechanism for a keyboard, an interlock for said keyboard including movable means moved upon actuation of any one key lever to intercept any other key lever, means in addition to said keyboard movable into engagement with said movable means for converting said interlock to a key-lock, and electrical control means responsive to a remotely initiated signal for operating said converting means.

2. In a remote control lock device for a keyboard, an interlock for said keyboard including movable means, moved upon actuation of any one key lever to intercept any other key lever, means, in addition to said keyboard, movable to either of two positions and into and out of engagement, respectively, with said movable means and operative at one position thereof for converting said interlock to a key-lock, and means including a solenoid responsive to a remotely initiated signal for controlling the position of said converting means.

3. In a remote control lock device for a keyboard, an interlock for said keyboard including movable means, moved upon actuation of any one key lever to intercept any other key lever, means in addition to said keyboard movable into engagement with said movable means for converting said interlock to a key-lock, a solenoid responsive to a remotely initiated signal, and means co-operating with said solenoid and said converting means to render said converting means operative upon energization of said solenoid.

4. In a remote control lock device for a keyboard, an interlock for said keyboard including movable means, moved upon actuation of any

one key lever to intercept any other key lever, means in addition to said keyboard movable into engagement with said movable means for converting said interlock to a key-lock, a solenoid responsive to a remotely initiated signal, and means cooperating with said solenoid and said converting means to render said converting means inoperative upon energization of said solenoid.

5. In a lock device for a keyboard, interlock means for said keyboard including movable means, moved upon actuation of any key lever to intercept any other key lever, and means converting said interlock means to key-lock means whereby none of the keyboard levers may be depressed comprising a pivoted lever operative into and out of contact with said movable means, and solenoid means for controlling the position of said lever.

6. In a lock device for a keyboard, an interlock for said keyboard including a plurality of movable interlock elements, moved upon actuation of any one key lever to intercept any other key lever and means converting said interlock to a key-lock whereby none of the keyboard levers may be depressed comprising means movable into and out of contact with certain of said elements, and solenoid means for controlling the position of said converting means.

7. In a lock device for a keyboard, an interlock for said keyboard including a plurality of rollers, movable into closer association upon operation of any one key lever to thereby prevent operation of any other key lever and means in addition to said keyboard for converting said interlock to a key-lock comprising a lever movable into and out of contact with a certain pair of said rollers, and electrical means for controlling the position of said lever.

8. In a lock device for a keyboard, an interlock for said keyboard including movable means, moved upon actuation of any one key lever to intercept any other key lever, means for converting said interlock to a key-lock to prevent the operation of said keyboard including a lever, movable to either of two positions and into and out of engagement, respectively, with said movable means, means biasing said lever to one position, and solenoid means connected to said lever and operative upon energization thereof to move said lever to another position against the force of said biasing means.

9. In a lock device for a keyboard, an interlock for said keyboard including movable means, moved upon actuation of any key lever to intercept any other key lever, a pivoted lever, movable into and out of engagement with said movable means for converting said interlock to a key-lock to prevent the operation of said keyboard, means biasing said lever to a non-engaging position, and solenoid means connected to said lever for moving the same into an engaging position.

10. In a device of the character described, a keyboard interlock including movable means, moved upon actuation of any one key lever to intercept any other key lever, a pivoted lever movable into and out of engagement with said movable means for converting said interlock from an interlock to a key-lock, means biasing said lever to operative position, and solenoid means for moving said lever to inoperative position against the force of said biasing means.

11. In a device of the character described, a keyboard interlock including movable means,

moved upon actuation of any key lever to intercept any other key lever, a pivoted lever movable to different positions and into and out of engagement with said movable means for converting said interlock alternately from an interlock to a key-lock and vice versa, means biasing said lever to one position, a solenoid, and crank means connecting said solenoid and lever for moving said lever into another position against the force of said biasing means upon energization of said solenoid.

12. In a device of the character described, a keyboard interlock including movable means, moved upon actuation of any key lever to intercept any other key lever, a pivoted lever movable to alternate positions and into and out of engagement with said movable means for alternately converting said interlock means to a key-lock and vice versa, means biasing said lever to one of said positions, a solenoid, and a pivoted crank connecting said lever and said solenoid for moving said lever to another position against the force of said biasing means upon energization of said solenoid.

13. In a device of the character described, a keyboard interlock including movable means, moved upon actuation of any key lever to intercept any other key lever, a pivoted lever movable to alternate positions and into and out of engagement with said movable means for converting said interlock alternately from an interlock to a key-lock and vice versa, means biasing said lever to one of said positions, a solenoid operated member, a solenoid for operating said member, a bell-crank lever comprising a pair of legs having forked ends at the extremities of the respective legs thereof, and means intermediate the ends of one leg of said lever pivotally mounting said lever for oscillation, one of said forked ends engaging said lever and the other of said forked ends engaging said solenoid member whereby upon energization of said solenoid said bell-crank lever moves said pivoted lever to the other of said positions.

14. In a device of the character described, a keyboard interlock including movable means, moved upon actuation of any key lever to intercept any other key lever, means movable into and out of engagement with said movable means for alternately converting said interlock to a key-lock and vice versa, and means controlling said second named means comprising resilient means biasing said second named means to one position and a bell-crank having a pair of legs and forked ends at the ends of the respective legs thereof, a solenoid, a support for said solenoid, a cone-shaped pivot having one end thereof inserted in one leg of said bell-crank and the other end thereof in said support, pivotally mounting said bell-crank on said support, and a plunger for said solenoid, one of said forked ends engaging said plunger and the other of said forked ends engaging said second named means whereby upon energization of said solenoid, said bell-crank is oscillated to move said second named means against the opposition of said resilient means.

15. In a device of the character described, a keyboard interlock including movable means, moved upon actuation of any key lever to intercept any other key lever, a pivoted lever movable to alternate positions and into and out of engagement with said movable means for converting said interlock alternately from an interlock to a key-lock and vice versa, means biasing

said lever to one of said alternate positions, a bell-crank lever having a pair of connected legs, a solenoid, a support for said solenoid, means pivotally connecting the free end of one of said legs to said lever, fork means connecting the free end of the other of said legs to said solenoid, and cone means mounted on said support, the

apex of said cone entering one of the legs of said bell-crank, said biasing means and said bell-crank lever moving said lever into or out of said engagement in accordance with the electrical condition of said solenoid.

HENRY L. THOLSTRUP.

CERTIFICATE OF CORRECTION.

Patent No. 2,255,030.

September 2, 1941.

HENRY L. THOLSTRUP.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 73, claim 4, for "devise" read --device--; page 3, first column, line 12, claim 5, for the word "up" read --upon--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of November, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

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