SELF-EJECTING KEYHOLDER WITH ILLUMINATION

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5 Claims

This invention relates to a key holder, and more particularly, to a keyholder that will automatically eject a key from a lock after the key has been used to perform its locking or unlocking function.

In recent years, a number of devices have been developed for automatically ejecting a key from a lock into the user's hand. All of these devices provide some form of spring means to provide a spring tension against the key which will automatically remove the key from the lock after the key has been turned in the lock to perform its locking or unlocking function. Devices of this type have been found to be particularly useful on automobile keys. Thus, it has been found that a great many automobile thefts are occasioned by the owner's inadvertently leaving his key in the ignition after turning off the engine. When utilizing the key holders with the self-ejecting means presently in use, when the ignition is turned off, the key will automatically be ejected into the driver's hand, thereby preventing the inadvertent leaving of the key in the ignition lock.

One of the devices shown in the prior art includes a rectangular case for the key, with a pair of longitudinally extending slots formed in each side of the case. The key is received in a channel within the case, and is retained in the case by spring means. The key is removed from the case by use of a projecting pin which passes through the slots and the hole in the keyhead.

The device of this invention provides a number of structural improvements over this prior art keyholder, and because of these improvements, possesses a number of functional advantages.

One of the improvements of the device of this invention is the provision of a channel in the case which is open at its top and bottom. In this way, only the jagged edges of the key will be maintained within the channel, and the head of the key will project outwardly of the channel. Accordingly, the key holder of this invention can be made smaller in size than the prior art keyholder in that it will not be necessary to provide a channel sufficiently large to accept all variations in keyhead sizes.

Another improvement embodied in the device of this invention is the provision of light means in connection with a case formed from a transparent plastic. When the light means are turned on, the light will be diffused through the plastic, thereby illuminating the key and the associated lock. This in turn facilitates the insertion of the key into the lock.

It is accordingly an object of this invention to provide a novel keyholder.

It is another object of this invention to provide a novel self-ejecting keyholder with illuminating means.

These and other objects of this invention are accomplished by providing a keyholder comprising a case, a channel formed within said case for the reception of a key, spring means urging said key into said case, said key being slidable out of said case against the urging of said spring means, said case being formed from a transparent material, and light means within said case, with the light from said light means being diffusible through said case, whereby said key and the lock into which said key will be inserted will be illuminated.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is a side elevational view of the keyholder of this invention, partially broken away for the purpose of clarity;

FIG. 2 is a sectional view taken along the line 2--2 of FIG. 1;

FIG. 3 is an enlarged sectional view taken along the line 3--3 of FIG. 1;

FIG. 4 is an enlarged sectional view taken along the line 4--4 of FIG. 1; and

FIG. 5 is an exploded perspective view of the keyholder of this invention.

Referring now in greater detail to the various figures of the drawings wherein like reference characters refer to like parts, a keyholder embodying the present invention is generally shown at 10 in FIG. 1. Device 10 basically comprises a case 12 having a channel 14 for the reception of a key.

The rear portion 16 of case 12 is basically rectangular in shape, and includes an L-shaped base plate 18 and a cover plate 20. Base plate 18 includes a leg 22 which lies in a plane that is parallel to channel 14 and a leg 24 which is perpendicular to the channel. A channel 26 is formed in leg 22. Channel 26 continues as an opening 28 through leg 24, and is therefore in communication with channel 14 (FIG. 2).

A recess 30 is formed in leg 18, and includes an arcuate wall 32 therein. A slot 34 is formed in wall 32 (FIG. 4). A recess 36 is formed in leg 24 (FIG. 3). Recess 36 is in communication with recess 30.

A recess 38 is formed in channel 26. A plurality of notches 40 is formed in the inner surface of leg 22, and notch 42 is formed on the inner surface of leg 24.

Cover plate 20 includes a channel 44 formed on its inner surface. Channel 44 is adapted to be aligned with channel 26, thereby forming a circular channel (FIG. 4). A pin 46 is formed in the wall of channel 44. A recess 48 is formed below channel 44. A hole 50 passes from the exterior of plate 20 into recess 48. A plurality of pins 52 are adapted to be received in notches 40 when cover plate 20 is placed against base plate 18.
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Channel 14 is formed in a horizontal extension 54 of leg 24. Extension 54 comprises a bar having vertical channel 14 extending therethrough. A slot 56 is formed in each leg 58 of bar 54. A flange 60 is formed at the forward end of leg 58, and an opening 62 is formed in flange 60. Opening 62 is in communication with channel 14.

A light assembly, generally shown at 64 in FIG. 3, is mounted in a channel formed by recesses 30 and 48. The light assembly 64 includes a miniature incandescent lamp 66 which is mounted in recess 36. Lead 68 connected to lamp 66 ends in terminal 70 which is positioned within arcuate wall 32. A wafer battery 72 is snapped into the recess formed by arcuate wall 32, and is in electrical connection with terminal 70.

A second lead 74 is connected to lamp 66, and terminates in ring 76. A metallic leaf spring 78 having a flange 80 is mounted over ring 76. A screw 82 passes through a hole in flange 80 and ring 76, and is threadedly secured in leg 24 (FIG. 3). Thereby securing lead 74 and leaf spring 78 in place. An outstribbuck 84 is formed on spring 78.

A disc 86 having a projecting shank 88 is mounted on plate 20 by passing the shank through hole 50. The shank is held in place by pin 90 which passes through a hole 92 in the shank.

As seen in FIG. 3, leaf spring 78 urges shank 88 outwardly from hole 50. However, pin 90 maintains the shank in place. To light lamp 66, the circuit including the lamp is closed by depressing disc 86 thereby bringing nib 58 into physical and electrical contact with wafer battery 72, thereby completing a circuit comprising the battery, lead 68, lamp 66, lead 74 and leaf spring 78. As will be explained hereinafter, when lamp 66 is lit, the entire case 12, including arm 54, will be illuminated.

A key 92 having a head 94 and a shank 96 is mounted in channel 14 by inserting the shank of the key into the channel and passing the shank through opening 68. A threaded pin 98 is passed through a slot 56 through a hole in the head of the key 92 and out through the other slot 56. A circular nut 100 is then threadedly secured on pin 98, thereby securing key 92 in channel 14 (FIG. 2). One end 102 of coiled spring 104 is looped over pin 98. The spring is then placed in channel 26. Cover plate 20 is then positioned against base plate 22, and the two plates are secured together by the insertion of pins 52 in the associated notches 40. The light assembly 64 is assembled on base plate 18 prior to the time the cover plate 20 is mounted in place. At the time the cover plate is mounted in place, pin 46 is passed through a loop 106 formed on the other end of spring 104. The fully assembled condition of the key ejection mechanism is shown in FIG. 2.

When it is desired to use the key 92, the key is moved from the position shown in full line in FIG. 1 to the position shown in phantom at 92' in FIG. 1. This is accomplished by grasping nut 100 and disc 108 on pin 98 with the thumb and forefinger and pushing the pin forward in slot 56, thereby moving the key to the position shown in phantom in FIG. 1. This will expose the cut teeth in the key, and will enable the insertion of the key into a lock. After the key has been inserted into the lock, the key and the associated keyholder 10 are then rotated in a clockwise or counterclockwise direction in order to open or close the lock. After the rotational movement of the lock has been completed, and pressure is removed from the pin 98, spring 104 will urge pin 98 back to the position shown in FIG. 2, thereby withdrawing the key from the lock. This is accomplished in view of the fact that flange 60 will abut the face plate of the lock and end 106 of spring 104 is rigidly mounted relative to the flange 60. Therefore, all movement of the lock is coupled with the movement of pin 98, which is secured to key 92. When the keyholder is used in the manner described above, the spring 104 will completely remove the key from the lock, and deposit the key in the user's hand. In this way, there will be a self-ejecting action on the key, thereby obviating the problem of inadvertently leaving the key in a lock.

The device of this invention is particularly useful in connection with automobile ignition locks. When a key has been rotated in the lock to unlock the ignition system, the key will automatically be retained in the lock by the lock tumblers. This prevents the removal of the key from the ignition when the ignition is unlocked. Making the theft of the car more difficult. Thus, so long as the ignition is in the "on" position, the key will be retained in the lock. However, as soon as the ignition is turned off, the key will automatically be ejected from the ignition lock by the action of spring 104 on pin 98 and the key secured thereto.

The keyholder is formed from a transparent material, which is preferably a transparent plastic. The base plate 18 and arm 54 are molded as a unitary element and cover plate 20 is a unitary molded element. Any of the transparent plastics known to the art can be used in carrying out this invention. Thus, cellulose, phenolic plastics, such as Bakelite, or acrylic plastics, such as Lucite, can be used.

The use of the transparent material serves the function of diffusing and transmitting the light produced by lamp 66. Thus, when using the keyholder of this invention, the user will hold the rear portion in one hand, and at the same time depress disc 86, thereby lighting lamp 66. The light emanating from the lamp will then be diffused and transmitted by the transparent material along arm 54, thereby illuminating key 92 and the lock into which the key will be inserted. The key can then be moved to the position shown at 92' by the other hand. In this way, the keyholder serves the dual purpose of providing a self-ejecting mechanism for a key, and in addition, a light serves for illuminating the key and the associated lock when the key is to be used in unlit places.

Having channel 14 passing entirely through arm 54 permits the keyholder to be used with all keys, regardless of the size of the heads of the keys. Thus, the head 94 of the key projects above and below the top and bottom edges of legs 58. In the prior art devices, the case for the key is entirely exposed, and it is desired to change the storing of the key must be sufficiently large to accommodate all sizes of key heads. In many cases, the keyholder will necessarily be much larger than necessary for accommodating the key. This problem does not exist when utilizing the open channel of the keyholder of this invention.

Another feature of the keyholder of this invention is the fact that the case is basically rectangular in shape, with the sides of the case being parallel to the sides of the key. In many of the prior art devices, a tubular case is utilized. Having the flat case of the keyholder of this invention facilitates the storage of the keys in the pocket of the user, and it will not produce any unsightly bulges, as are produced when using tubular cases. Although the invention has been described as using pins 52 in notches 40 to secure cover plate 20 on base plate 18, it is to be understood that other securing means can be used. Thus, screws passing through cover plate 20 can be threadedly secured in base plate 18 in order to obtain the desired connection.

If it should become necessary to replace battery 72, cover plate 20 is removed, and a new battery is easily inserted in the recess formed by arcuate wall 32. After the device has been assembled, and it is desired to change keys, it is not necessary to remove cover plate 20. All that need be done is to remove pin 98 from the hole in the key, and insert a new key into channel 14. During this process, the end 102 of spring 104 need not be removed from the pin 98.

Without further elaboration, the foregoing will so fully illustrate my invention, that others may, by applying current or future knowledge, adopt the same for use under various conditions of service.
I claim:

1. A keyholder comprising a case, a channel formed within said case for the reception of a key, spring means urging said key into said channel, said key being slidable out of said channel against the urging of said spring means, said case being formed from a transparent, light-transmitting plastic, said case further including a compartment, with said channel being formed forwardly of said compartment, and light means within said compartment, said light means including a lamp which is wholly within said compartment, whereby the light from said lamp will be diffused through said light-transmitting, transparent plastic, thereby illuminating said key and the lock into which said key will be inserted.

2. The keyholder of claim 1 wherein said compartment comprises a base plate and a removable cover plate, and said lamp is mounted within said base plate.

3. The keyholder of claim 2 and further including battery means and switch means in said compartment, whereby the closing of a circuit comprising said lamp, said battery means and said switch means will light said lamp.

4. The keyholder of claim 3 wherein said switch means comprises a depressible button on said case.

5. The keyholder of claim 3 wherein said battery means comprises a wafer battery, and said base plate includes a recess for said wafer battery.

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