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KEY EJECTING KEY CONTAINER

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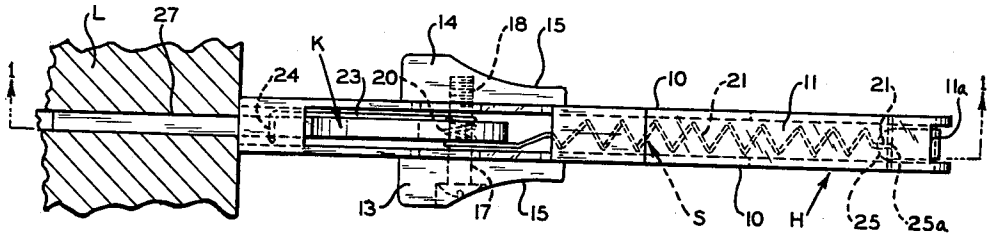


FIG. 3

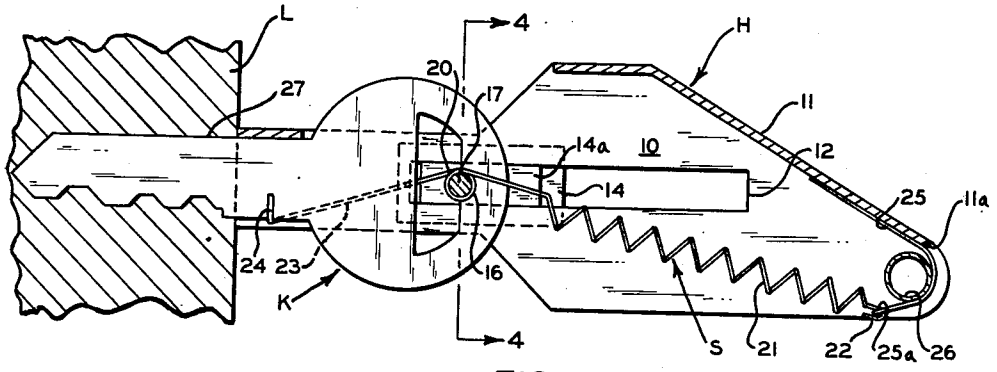


FIG. 1

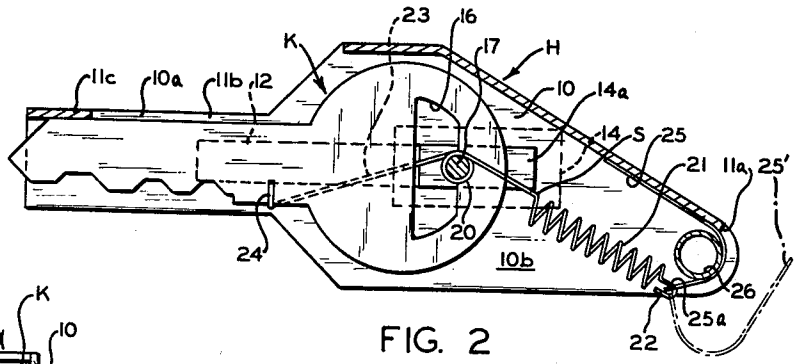


FIG. 2

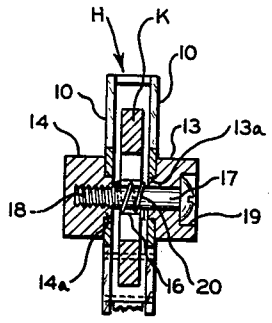


FIG. 4

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KEY EJECTING KEY CONTAINER

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5 Claims. (Cl. 70—414)

This invention relates to certain novel and useful improvements in key retracting, key containers for automatically ejecting a key from a lock when the elements of the lock permit withdrawal of the key.

While various automatically ejecting, key containers have been designed previously, they have not been sold in large numbers, so far as I am aware. One of the reasons previous constructions have not been generally accepted is the fact that many designs have required modification of the keys in order to render them adaptable to use with the container. Probably one of the principal potential uses for key ejecting containers of this type is with automobile keys to insure that the key will not simply be left in the ignition lock of the automobile and the driver locked out or a thief provided with the key. The ignition keys furnished by automotive manufacturers are of a fairly standard nature and it simply is not reasonable to presume that the automotive manufacturers would or will alter the design of their keys to fit or be operative with a particular key holder. Further, it is not realistic to presume that the purchasing public has facilities available to modify the construction of conventional keys or would take the trouble to have them so modified to fit some of the key holders previously offered. Accordingly, one of the principal objects of the present invention is to design a key container which can house, and will be operative with, any of a great many standard keys presently in use.

A further disadvantage of some of the previous constructions proposed is the difficulty with which the key is operatively secured within the key container. It is desirable first of all that the key be housed in a container so that the spring or the like which is employed to return the key to the housing is protected within the housing so that it cannot be damaged when carried in the pocket of the user or catch in his clothing. Further, inasmuch as a spring is used to retract the key, and the spring during assembly must be operatively connected with the key and with the housing, it is clearly important to provide a construction in which assembly of the key in the housing and connection of the spring is so easily accomplished that anyone can easily perform the assembly operation. Accordingly, a further very important object of the instant invention is to provide a key housing of the character described which fully houses the retracting spring and key but is so designed that operative assembly of the key within the container is very simply accomplished.

It is a further important object of the invention to provide a key container which is so designed that extremely low cost, mass production of the container is facilitated. In this regard the instant invention provides a one-piece housing which can be very easily blanked out and formed, and the container of the instant invention includes an integral top wall connecting the two sides of the container which has an open bottom and front end permitting ready insertion of the key.

Still a further object of the invention is to provide preferably unitary spring means with a key ejecting container of the character described which can be mounted on the post which supports the key and functions to both automatically retract the key within the casing and exert a force urging the key upwardly so that it cannot drop out of the open bottom of the container or casing.

A further object of the invention is to design a self-ejecting, key container of the type described which can be generally shaped to a conventional key so that a minimum of metal need be used in its production.

A still further object of the invention is to provide a device of the character described which is compact so that it can be easily carried in the pocket and is free of complicated, delicate, and costly mechanisms which are subject to failure or improper operation.

A still further object of the invention is to provide an ejecting key retainer having a minimum number of separate parts, which normally maintains the keys compactly within its confines so that the blade of the key does not normally project from the container and cannot tear the pockets of a garment.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing, and more particularly pointed out in the appended claims, it being understood that equivalent changes may be made in the various elements which comprise the invention without departing from the spirit thereof or the scope of the appended claims.

In the drawings:

Figure 1 is a sectional, side elevational view taken on the line 1—1 of Figure 3 with the key shown in extended position within a lock;

Figure 2 is a similar view showing the key retracted to position within the confines of the container or housing. the broken lines illustrating a preassembled position of the spring retaining strap.

Figure 3 is a top plan view of the key ejector container as it is shown in Figure 1; and

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

Referring now more particularly to the accompanying drawings, in which I have shown only a preferred embodiment of the invention, a letter H generally indicates the container or housing within which the key K is normally disposed, as in Figure 2. The container or housing H is so designed that it can be simply blanked from a flat piece of metal or the like and thence formed to shape, and comprises side walls **10** connected by a top wall **11** as shown. It will be observed that the housing H is generally key-shaped in configuration and accordingly each side wall **10** includes a shank portion **10***a* and a body portion **10***b*, the portion **10***b* being so formed, however, that it extends rearwardly of the head of the key K when the latter is in retracted position as in Figure 2.

Provided in each side wall **10** is an elongated, longitudinally disposed slideway or slot **12** as shown and members **13** and **14** on opposite sides of the housing H are provided with reduced slide portions **13***a* and **14***a*, respectively, which extend into the slots **12** and guide therein. The members **13** and **14** may be contoured as at **15** to facilitate gripping them with the fingers or they may be knurled, if desired.

Conventional keys are almost always provided with substantial openings **16** in the heads thereof and so a screw **17** carried by member **13**, and threaded into member **14** as at **18**, can be inserted through the opening **16** in key K to mount the key between the sides **10** of the container H. The member **13** may be counterbored as at **19** to provide a seat for the head of screw **17**. Because screw **17** has a diameter of such size that it is of considerably less diameter than opening **16**, space is provided within the opening **16** for reception also of the intermediate coils **20** of a spring S which performs a dual function. The spring S includes, in addition to the coils **20** which are mounted on screw **17**, a rear section having convolutions **21** terminating in a hooked portion **22**, and also a front section comprising a downwardly

and forwardly angled portion 23 extending generally longitudinally along the shank of the key, the portion 23 having a hooked portion 24 which hooks under the shank of the key. In natural unstressed condition section 23 is in longitudinal alignment with coil portion 21.

A strap member 25, formed of a flexible resilient metal, has an opening 25*a* through which the terminal rear end 22 of spring S extends and this strap 25 in assembly is forced around the rivet 26 which connects the rear ends of side walls 10 to operatively connect the rear end of spring S to the housing H. The broken lines at 25' in Figure 2 indicate the position of strap 25 before it is inserted into the space between the lower terminal edge 11*a* of top wall 11 and rivet 26 and it will be seen that once the strap 25 is forced into position it then bears over a great portion of its length on top wall 11 and securely holds the rear end of spring S in anchored position. In order to conserve metal the top wall 11 may be cut away as at 11*b*, so long as a portion 11*c* remains against which the shank of the key K may bear. In operation, when it is desired to insert the key into a lock mechanism, which I have generally designated L, having a key recess 27, it is simply necessary to bring the front end of the housing or container H into engagement with the portion of the lock L adjacent to the key opening 27 and thence force the members 13 and 14 forwardly relative to the key container H to insert the shank of the key into the key opening 27. If the key is then twisted or turned in the lock opening 27 in the usual way so that the tumblers move up into engagement with the recesses in the key blade, the key will be held in position as shown in Figures 1 and 3. If the lock L were an automobile ignition lock the automobile could be started when the key was thus turned to "on" position. When the key is returned to original position and the tumblers moved out of the way so that the blade of the key can be withdrawn from the lock opening 27, the spring S automatically returns the key to the position in which it is shown in Figure 2. This, of course, prevents the driver from locking himself out of his car or aiding someone to steal the car. The portion 23 of the spring urges the blade of the key upwardly in engagement with the portion 11*c* of the top wall 11 to insure a proper withdrawal thereof, and also prevents the shank of the key from falling down through the bottom of the container H and coming into contact with the garment when it is being carried in the pocket.

In the assembly of a key K in the casing H, the first step lies in inserting the front end section 23 of the spring through the opening 16 from the left side to the right side, as viewed in Figure 3, and thence hooking portion 24 under the shank or blade of the key as shown. Thence the key and spring are inserted into the housing H through the open bottom thereof and the opening 16 in the key and coils 20 of the spring are brought into register with the slots 12. Finger grip parts 13 and 14 may then be inserted into the slots 12 and positioned so that the screw 17, when inserted, passes through the convolutions 20 of the spring. With the screw 17 tightened down, the blade 25 is then bent or deformed until its tip will enter the space between rivet 26 and edge 11*a* of the top wall of the housing. Bending of the flexible and resilient blade 25 into the curve necessary for insertion does not stress the blade 25 beyond its elastic limit, however, and when blade 25 is pushed into the position in which it is shown in Figures 1 and 2 it bears against the top wall 11 because it wants to return to its natural unstressed shape, which is depicted at 25' in Figure 2.

It is to be understood that the drawings and descriptive matter are in all cases to be interpreted as merely illustrative of the principles of the invention rather than as limiting the same in any way since it is contemplated that various changes may be made in the various elements to achieve like results without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A key holder for automatically ejecting a key from a lock comprising a key; a housing having a pair of spaced, generally parallel side walls joined by an integral top wall, said housing being of such size as to contain said key therein, the bottom of said housing being open to permit insertion of said key into said housing and the front of said housing being open to permit the shank of said key to be extended therefrom, said housing having an opening through at least one side wall; manipulatable means extending through said opening in said side wall and connected to said key to permit the latter to be projected forwardly relatively to said housing; spring means connected to said manipulatable means and to said housing at the rear thereof and constantly exerting a force on said key tending to move the latter rearwardly of said housing; and a spring element connected to said key and constantly exerting a force on the latter in a direction upwardly from the bottom of said housing to prevent said key from falling through said open bottom.

2. A key holder as set forth in claim 1 including a reinforcing element spanning the space between said side walls adjacent to the rear of said housing and spaced below said top wall, and including a flexible anchor member connected at one end to said spring means and having its other end wrapped around said reinforcing element and located in the space between the latter and said top wall.

3. A key holder for automatically ejecting a key from a lock comprising a key having an apertured head and an integral shank extending therefrom; a housing having a pair of spaced, generally parallel side walls joined by an integral top wall, said housing being of such size as to contain said key therein, the bottom of said housing being open to permit insertion of said key into said housing and the front of said housing being open to permit the shank of said key to be extended therefrom, said housing having an opening through at least one side wall; manipulatable means extending through said opening in said side wall and including a part extending through the aperture in the head of said key to permit said key to be projected forwardly relatively to said housing; spring means having a first coiled portion removably receiving said part and a second coiled portion located rearwardly of said key and connected to the rearward part of said housing for constantly exerting a force on said key tending to move the latter rearwardly of said housing; and a spring element connected to said key and constantly exerting a force on the latter in a direction upwardly from the bottom of said housing to prevent said key from falling through said open bottom.

4. A key holder as set forth in claim 3 wherein said spring element is integral with said spring means and projects forwardly from said first coiled portion, the forward end of said spring element being formed as a hook and engaging the lower edge of said key shank.

5. A key holder as set forth in claim 3 including a reinforcing element spanning the space between said side walls adjacent to the rear of said housing and spaced below said top wall, and including a flexible anchor member connected at one end to said spring means and having its other end wrapped around said reinforcing element and located in the space between the latter and said top wall.

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