

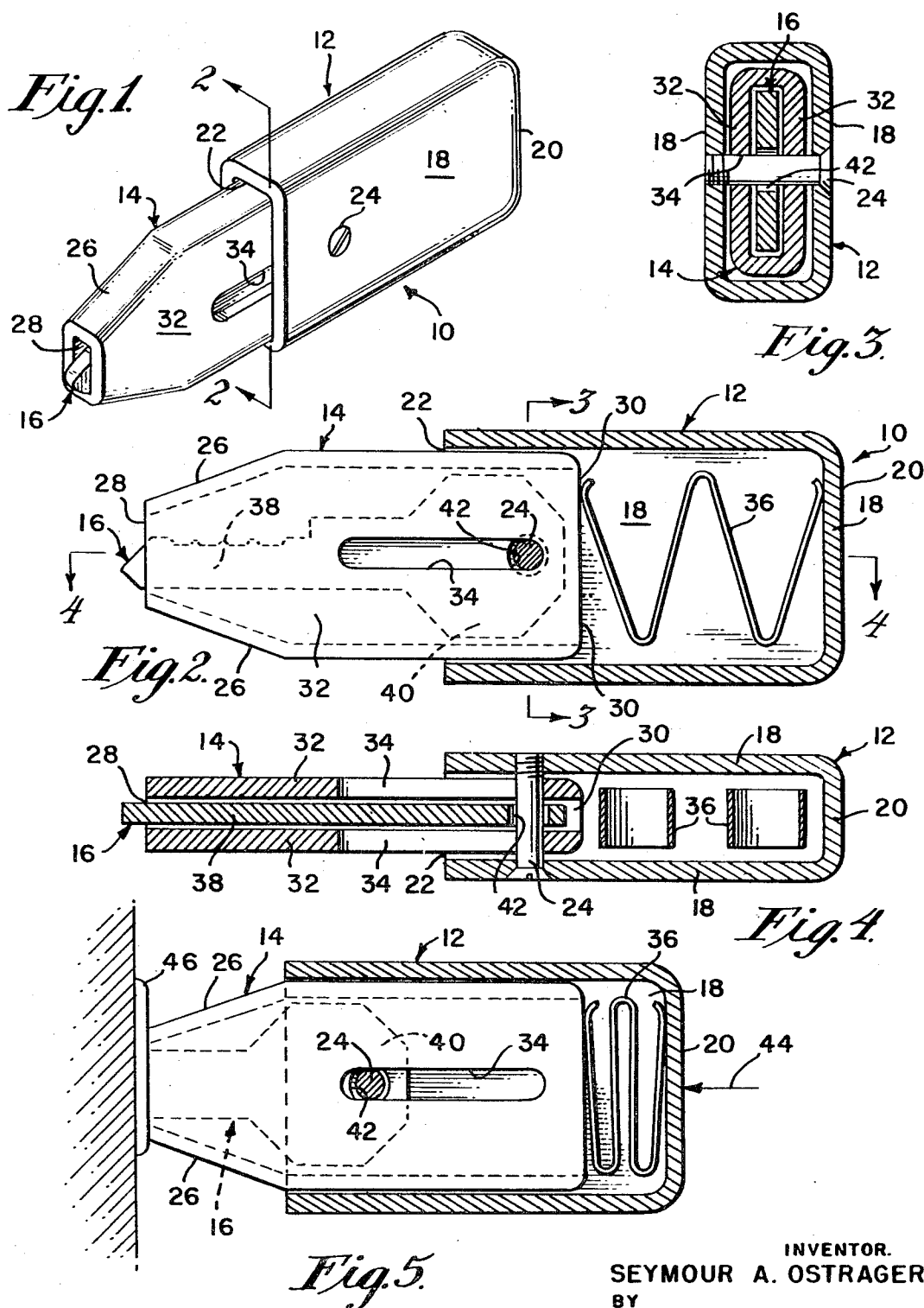
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SELF-EJECTING KEY HOLDER WITH RETRACTABLE SHIELD

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**SELF-EJECTING KEY HOLDER WITH
RETRACTABLE SHIELD**
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5 Claims

ABSTRACT OF THE DISCLOSURE

A key holder that will automatically eject a key from a lock. The key holder includes a casing and a shield slidably mounted within the casing. A pin passes through the casing, a pair of aligned slots in the shield and the opening in a key which is mounted within the shield. The shield is urged from the casing by a spring positioned between the rear wall of the casing and the rear wall of the shield. The pin serves as a stop for the shield to prevent the shield from being displaced from the casing. The spring-urged shield serves to eject the key from the lock, by the bearing of the front of the shield against the face plate of the lock. The front of the shield is tapered toward the enclosed key to facilitate the sighting of the lock for the insertion of the key.

This invention relates to a key holder, and more particularly, to a key holder 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 place 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 for ejecting a key from an ignition lock comprises a hollow cylinder with a shield slidably mounted therein. The shield is spring-urged by a coiled spring outwardly of the cylinder. A pin is received in a slot in the shield and passes through the hole in the key and the wall of the cylinder, thereby preventing the complete removal of the shield from the cylinder. The front of the shield is provided with an annular flange, and the key projects through a hole in the flange. In use, this prior art device is placed up against the face plate of the ignition lock and the key is pushed into the lock. When doing this, the shield is pushed rearwardly into the casing, thereby compressing the coiled spring. The key is turned in the ignition lock, thereby securing the key in place. This is accomplishable in view of the fact that most, if not all, ignition locks now will secure the key in place whenever the ignition is in the "on" position. This requires the driver to lock the ignition whenever he removes the key. When the key is turned to the "off" position, the key and the associated key holder will automatically be ejected from the ignition lock. This is occasioned by the urging of the shield forward toward the ignition lock by the spring. As the shield moves forward, the key is retracted into the shield, thereby removing the key from the ignition lock.

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The key holder of this invention functions in a manner quite similar to the above-described prior art key holder. However, the key holder of this invention has a number of structural improvements over the prior art key holder, and because of these improvements, possesses a number of functional advantages.

One of the advantages is the fact that the casing and shield are rectangular in shape, rather than cylindrical. Having the flat shape, which generally conforms to the shape of a key, facilitates the storage of the key holder in a pocket or in any other location on the person. The cylindrical key holder may prove to be too bulky to be conveniently carried in a man's pocket.

Another advantage of the key holder of this invention is the fact that the front of the shield is tapered toward the key. This facilitates the sighting of the ignition lock when the key is inserted into the lock. In the prior art device, a large annular flange was positioned at the front of the shield, which rendered it far more difficult to insert the key into the ignition lock because the ignition lock was partially hidden by the flange.

Having the tapered front results in the further advantage of having substantially the entire key maintained within the shield. Thus, none of the teeth of the key will project from the shield when the shield is in its forwardmost position. This prevents any undesired tearing of the user's pocket. When using the enlarged annular flange at the front of the key holder, the key must project out to a point beyond the forward teeth in order to have a sufficient amount of the key visible for insertion into an ignition lock. The problem of insertion into ignition locks is compounded by the late model cars wherein the ignition locks are recessed into the dashboard making accessibility more difficult.

Accordingly, it is an object of this invention to provide a novel key holder.

It is another object of this invention to provide a novel self-ejecting key holder with a retractable shield for the key.

These and other objects of this invention are accomplished by providing a key holder comprising a casing, a shield slidably mounted in said casing, means for retaining a key within said casing and within said shield, said shield being slidable relative to said key and into said casing, spring means urging said shield in a direction out of said casing, and said shield tapering toward a central opening in the front thereof, with said key adapted to pass through said opening, whereby said key can be inserted in a lock, thereby pushing said shield into said casing, and said key will automatically be ejected from said lock by the urging of said spring against said shield.

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 perspective view of the key holder of this invention;

FIG. 2 is an enlarged sectional view taken along the line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 2; and

FIG. 5 is a sectional view similar to FIG. 2, but showing the position of the key holder with the key inserted in a lock.

Referring now in greater detail to the various figures of the drawings wherein like reference characters refer to like parts, a key holder embodying the present invention

is generally shown at 10 in FIG. 1. Device 10 basically comprises a case 12 and a shield 14 in which a key 16 is mounted.

Case 12 is basically rectangular in cross section, and has side walls 18 which lie in a plane that is parallel to the sides of key 16. Case 12 is closed at its rear end 20 and is provided with a basically rectangular opening at its forward end 22. Walls 18 are provided with a pair of aligned openings adjacent front end 22. A bolt 24 is adapted to pass through these openings, and is threadably secured in one of them (FIG. 3).

Shield 14 is also basically rectangular in shape, but includes tapering upper and lower walls 26 at the front thereof. Walls 26 terminate adjacent front opening 28, which is slightly larger in size than the size of the shank of key 16. The rear end of shield 14 is provided with an opening 30 for the insertion of key 16. The side walls 32 of shield 14 are each provided with an elongated slot 34. Bolt 24 is received in slots 34.

An undulating leaf spring 36 is positioned between the inside of rear wall 18 of casing 12 and the rear wall of shield 14. Spring 36 normally urges shield 14 outwardly from case 12. Bolt 24 in slots 34 serves as a stop to prevent the ejection of shield 14 from case 12.

In the use of the key holder 10, bolt 24 is threadably removed from case 12, thereby freeing shield 14 for removal from the case. After the shield has been removed, key 16 is slid into the shield through rear opening 30 in shield 14. The shank 38 of key 16 is positioned in the forward portion of shield 14, with the head 40 of the key being positioned in the rear. After the key has been inserted in the shield, the shield is reinserted into case 12. Spring 36 is slightly depressed under the urging of the rear edges of side walls 32 of shield 14. Bolt 24 is then inserted through one of the holes in side wall 18 of case 12, through one of the slots 34 in shield 14, and then through hole 42 in the head 40 of key 16. Bolt 24 is then threadably secured in the other wall 18 of case 12. It is thus seen that the bolt 24 not only holds shield 14 within case 12, but additionally retains the key 16 within the shield.

The key holder assembly is used by first locating the forward tip of key 16 in a lock opening. This is easily accomplished by sighting downwardly over the upper tapering edge 26 of shield 14 while locating the tip of the key in the lock. Pressure is then applied against the case 12 in the direction of arrow 44 (FIG. 5). Since the key 16 is rigidly secured to case 12 by bolt 24, pressure against the case will force the key 16 into the lock. At the same time, the forward edge of shield 14 will abut the lock plate 46. Since the shield 14 is slidably mounted relative to bolt 24 and case 12, the shield 14 will be moved rearwardly against the urging of plate 46 as the key 16 is inserted into the lock. After the key has been fully inserted, case 12 will be 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 case 12, spring 36 will urge shield 14 from the position shown in FIG. 5 to the position shown in FIG. 2. This in turn, applies pressure against casing 12, thereby moving it rearwardly, and at the same time withdrawing the key 16 from the lock. Continued movement of the case 12 to the position shown in FIG. 2 will completely remove the key 16 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, thereby making theft of the car more difficult. Thus, so

long as the ignition is in the "on" position, the key holder will be retained in the position shown in FIG. 5. However, as soon as the ignition is turned off, the key will automatically be ejected from the ignition lock by the action of spring 36 on shield 14.

Having the casing 12 and shield 14 in the rectangular shape shown minimizes the size of the key holder. This permits the user of the key holder to store the same in his pocket without any unsightly bulges, which bulges will occur when using the cylindrical key holders of the prior art. Utilizing the undulating leaf spring 36 in place of a coiled spring also aids in the reduction in size of the key holder.

The tapering top and bottom walls 26 of the shield 14 facilitate the sighting of the forward edge of the shank 38 of key 16 when inserting a key in a lock. This task is rendered far more difficult when utilizing the enlarged annular flange at the front of the shield in the prior art key holders. Since the keyhead is easily sighted using the shield of this invention, only a small portion of the key must protrude from the forward end of the shield in order to use the key holder. In this way, all of the jagged teeth on the shank 38 can be retained within the shield 14, which will prevent undue tearing of the pocket of the user of the key holder. In the prior art device wherein the enlarged annular flange was used on the shield, it was necessary to have a portion of the jagged teeth of the key project through the flange in order to permit sighting of the key relative to the lock.

The key holder of this invention can be made from any of the materials known to the art. Plastic materials are preferred from the standpoint of lightness, durability and attractiveness in color. Plastics that can be used are polypropylene, acrylonitrile-butadiene-styrene (ABS), and polystyrene. Various pigments can be added to the plastic materials in order to obtain the desired color for the key holder.

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.

What is claimed as the invention is:

1. A key holder comprising a casing, a shield slidably mounted in said casing, means for retaining a key within said shield, said casing and said shield each having a pair of flat sides lying in a plane parallel to the sides of said key, said shield being slidable relative to said key and into said casing, spring means urging said shield in a direction out of said casing, said shield tapering toward a central opening in the front thereof, with the taper extending downwardly from the top of said shield toward said opening and extending upwardly from the bottom of said shield toward said opening, with said key adapted to pass through said opening, said key being fixedly mounted with respect to said casing, whereby said key can be inserted in a lock, thereby pushing said shield into said casing by the abutment of the front of said shield against said lock, and said key being automatically ejectable from said lock by the urging of said spring means against said shield.

2. The key holder of claim 1 wherein said shield has a pair of side walls, with each of said side walls having a longitudinally extending slot formed therein, and the means for retaining said key within said casing comprises a pin passing through the walls of said casing, said slots and a hole in the head of said key, whereby the movement of said shield within said casing is limited by the abutment of the ends of said slots against said pin.

3. The key holder of claim 1 wherein said spring means is positioned between the back wall of said casing and the back wall of said shield.

4. The key holder of claim 3 wherein said spring means comprises an undulating leaf spring.

5. The key holder of claim 1 wherein said casing and said shield are formed from a plastic.

(References on following page)

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References Cited

UNITED STATES PATENTS

2,625,814	1/1953	Mullan	70—414
2,738,667	3/1956	Thompson	70—414
3,270,539	9/1966	Hirsch	70—414 5
3,313,137	4/1967	Maier	70—456

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