Sept. 18, 1951 J. J. SEAMAN ET AL 2,568,206

KEY EJECTOR FOR LOCKS

Filed May 11, 1950

Fig. 2

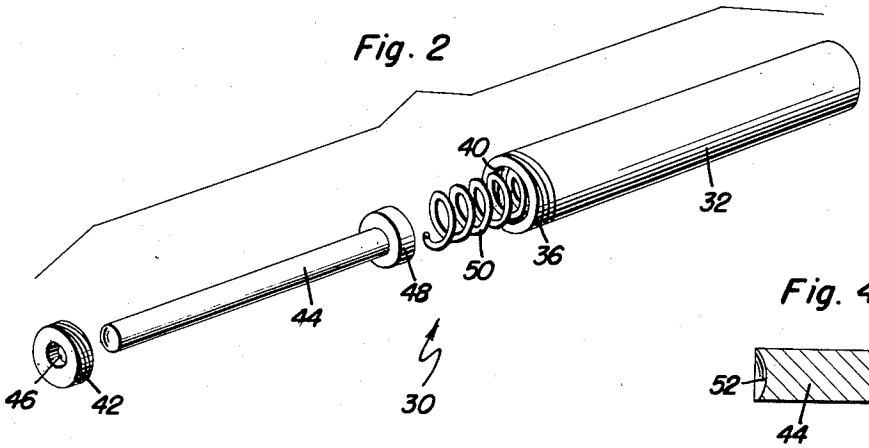


Fig. 4

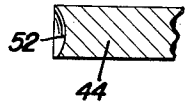


Fig. 1

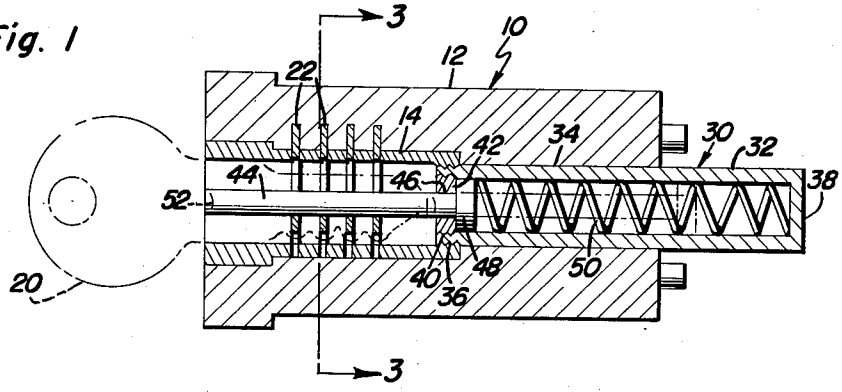
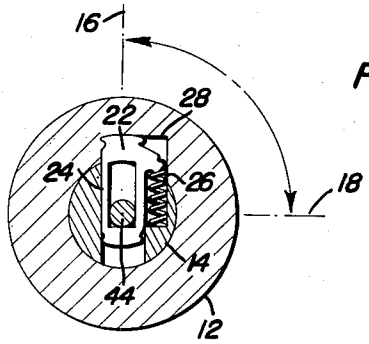


Fig. 3



Joseph J. Seaman
George E. Rightley
INVENTORS

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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KEY EJECTOR FOR LOCKS

Joseph J. Seaman and George E. Rightley,
Trenton, N. J.

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1 Claim. (Cl. 70—388)

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This invention relates to new and useful improvements and structural refinements in locks, more particularly ignition locks of automobiles and similar vehicles, and the principal object of the invention is to automatically eject the key from the lock when the latter is in its locked position.

This object is achieved by the provision of an ejecting mechanism including a spring-pressed plunger which is adapted to eject the key from the lock when the ignition is turned "off," an important feature of the invention residing in the provision of means for attaching the ejecting mechanism to the lock itself.

Some of the advantages of the invention reside in its simplicity of construction, in its efficient and dependable operation, and in its adaptability for use with locks of different types.

With the above more important objects and features in view, and such other objects and features as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is a longitudinal sectional view of the invention applied to a lock, the key of the lock being shown by dotted lines;

Figure 2 is an exploded perspective view of the invention per se;

Figure 3 is a transverse sectional view, taken substantially in the plane of the line 3—3 in Figure 1; and

Figure 4 is a fragmentary longitudinal sectional view of the plunger used in the invention.

Like characters of reference are employed to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the general reference character 10 designates a conventional lock including a cylinder 12 and a key-actuated barrel 14 which is rotatable in the cylinder from a locked position indicated at 16 in Figure 3 to an unlocked position indicated at 18 in the same figure.

In particular the lock 10 is of the type commonly used in ignition systems of automobiles and similar vehicles, being of the type wherein the key indicated by the phantom lines 20 in Figure 1 may be slid in and out of the barrel when the barrel is in its locked position, but wherein the key cannot be withdrawn from the barrel when the latter is unlocked, such as, while driving.

The barrel 14 is provided with a plurality of

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usual "tumblers" 22 which are slotted as at 24 to receive the key 20 and which are pressed by suitable springs 26 into a longitudinal channel 28 extending in the cylinder 12. In other words, when the barrel 14 is rotated to its locked position, the tumblers 22 project into the channel 28 and the barrel cannot be rotated to its unlocked position until the key 20 is inserted into the barrel so as to retract the tumblers and facilitate subsequent rotation of the barrel to its unlocked position 18. While the barrel is in the latter position, the tumblers 22 cannot be projected outwardly therefrom since there is no channel in the cylinder 12 to receive them, and consequently, the key 20 cannot be withdrawn until the device is again unlocked.

The invention resides in the provision of a key ejector which is designated generally by the reference character 30 and embodies in its construction a tubular holder 32 which is rotatably positioned in a bore 34 formed in the cylinder 12 and has an externally screw-threaded inner end portion which is threaded into the barrel 14 as indicated at 36.

The holder 32 has a closed outer end wall 38, while the externally screw-threaded inner end portion of the holder is also internally screw-threaded as at 40 to receive an externally screw-threaded bushing 42.

A plunger 44 is slidable through the aperture 46 in the bushing 42 and the plunger is provided at one end thereof with an enlarged head 48 which is slidable in the holder 32. A compression spring 50 is provided in the holder between the head 48 and the end wall 38, whereby the plunger is urged to a position wherein it projects into the barrel 14 and extends through the slots 24 of the several tumblers 22.

When the invention is placed in use and the key 20 is inserted in the barrel 14, the plunger 44 is pushed into the holder 32 against the resiliency of the spring 50, and when the key is then rotated to its unlocked position 18, the spring 50 cannot force the plunger to eject the key from the barrel, since in the unlocked position ejection of the key is not possible.

However, when the key is manually returned to its locked position 16, the spring 50 will automatically force the key out of the lock by means of the plunger 44, as will be clearly apparent. In this manner there will be avoided any possibility of inadvertently or accidentally leaving the key in the lock.

If desired, the key engaging portion of the plunger 44 may be provided with a depression or

seat 52 so as to properly center the plunger with the key when the latter is inserted in the barrel.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be restored to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

In combination with a lock including a cylinder and a key actuated barrel rotatable in said cylinder from a locked position wherein a key may be slid inwardly and outwardly therein to an unlocked position wherein sliding of the stated key is prevented, a tubular holder secured to and rotatable with said barrel, an ejecting plunger slidable in said holder and projectable into the barrel, and resilient means in said holder for urging the plunger into the barrel to automatically eject a key from the latter when the same is in its locked position, said barrel being provided with a screw-threaded counterbore, said holder having an end wall at one end and externally and internally screw-threaded portion at the other end thereof, the externally threaded portion of said holder being secured in said counterbore, and externally screw-threaded bushing provided in the internally threaded portion of said holder, said plunger being slidable through said bushing, and an enlarged head provided on said plunger in said holder, said resilient means comprising a compression spring interposed between said end wall and said head.

JOSEPH J. SEAMAN.
GEORGE E. RIGHTLEY.

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