March 18, 1941. H. T. LUCAS 2,235,526

KEY HOLDER

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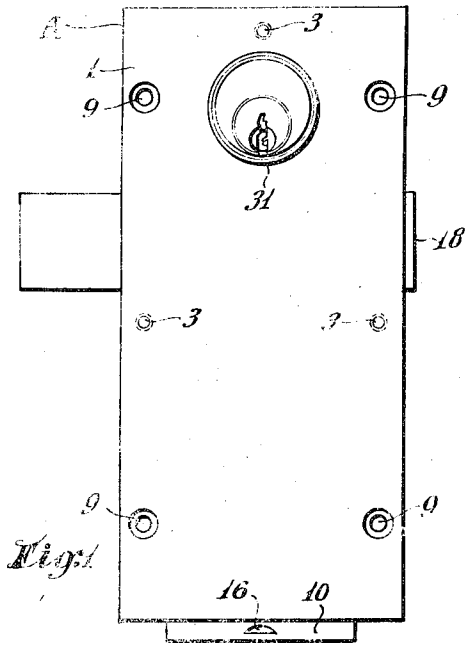


Fig. 1

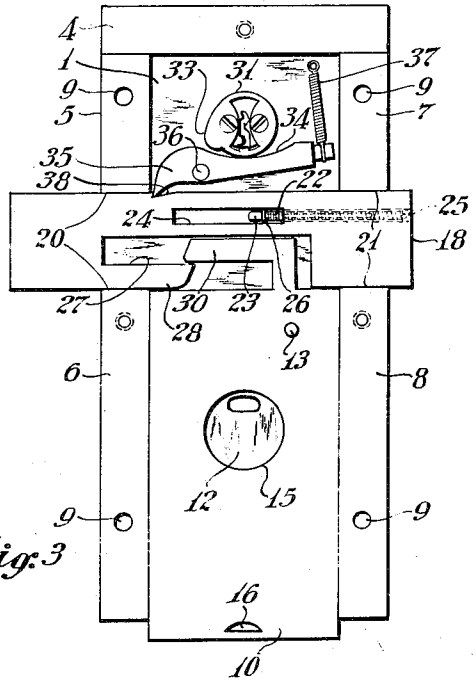


Fig. 3

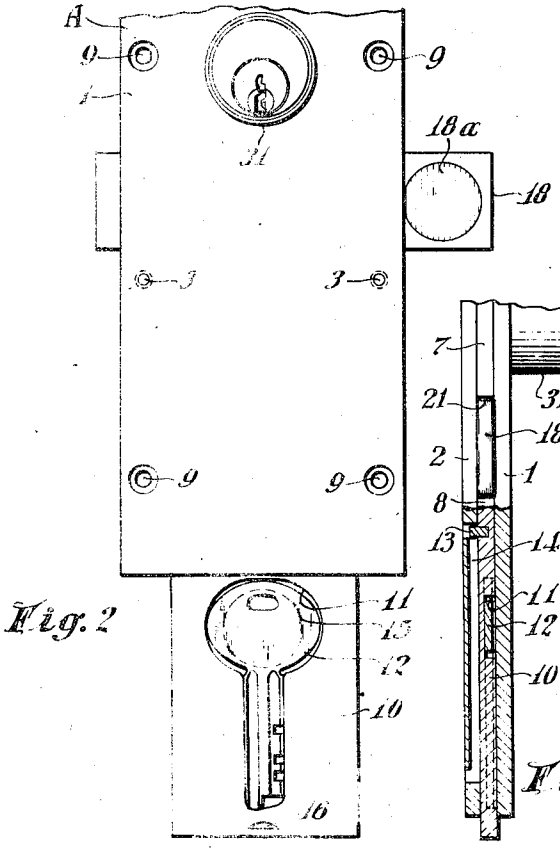


Fig. 2

Fig. 5

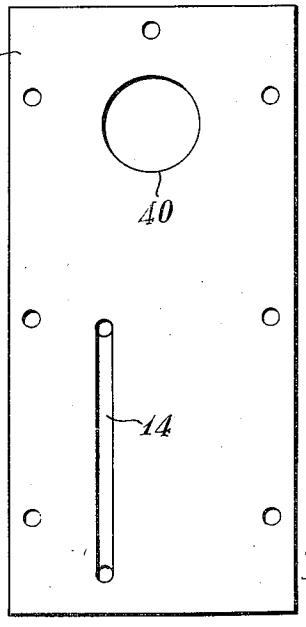


Fig. 4

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KEY HOLDER

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7 Claims. (Cl. 70—447)

My invention relates to key holders.

In railway signaling systems it is customary to provide suitable locks for various ones of the signaling devices to normally prevent access to the operating mechanism of these devices by anyone except certain specially authorized persons, such for example, as a signal maintainer or signal supervisor. An emergency occasionally arises, however, in which it becomes necessary to permit some other person to gain access to the operating mechanism of the devices, and to enable the necessary access to be obtained, an emergency key is provided which cannot be obtained without leaving some evidence of the fact that the key has been obtained. Heretofore, in order to provide the necessary evidence of the fact that the key has been obtained, the key has usually been housed in a container some part of which had to be broken to secure the key, thereby giving rise to some trouble and expense each time the key was removed from the container.

In accordance with my present invention, I eliminate the trouble and expense which results each time the emergency key is used by providing for the emergency key a new and improved key holder from which the key can be removed at any time without damage or injury to the holder, but which requires as a prerequisite to removal of the key the operation of a telltale indicator to a telltale position in which it is subsequently retained until released by a second key furnished only to the specially authorized person or persons.

It should be clearly understood at the outset that while a key holder embodying my invention is particularly suitable for use under the conditions outlined above, it is not limited to this particular use, but on the contrary will be found useful wherever it is desirable to provide a key which cannot be obtained without leaving an indication of the fact that the key has been obtained.

Other objects and characteristic features of my invention will appear as the description proceeds.

I shall describe one form of key holders embodying my invention, and shall then point out the novel features thereof in claims.

In the accompanying drawing, Fig. 1 is a front elevational view of a key holder embodying my invention with the parts in the positions which they normally occupy. Fig. 2 is a view similar to Fig. 1 but showing the parts of the key holder in the positions which they occupy when it is desired to remove the key from the key holder. Fig. 3 is a back view of the key holder shown in the preceding views with the backplate removed to better illustrate the details of construction of the key holder. Fig. 4 is a detail view showing the inner side of the backplate. Fig. 5 is a detail view, partly in section and partly in side elevation, of the key holder shown in the preceding views.

Similar reference characters refer to similar parts in each of the several views.

Referring to the drawing, the key holder comprises a suitable casing A which in the form here shown consists of a frontplate 1 and a backplate 2 secured together by means of screws 3, and maintained in parallel spaced relation by means of a spacing member 4 disposed between the plates at their upper ends, and four other spacing members 5, 6, 7 and 8 disposed between the plates at their opposite sides. The spacing members 4, 5, 6, 7 and 8 may, if desired, be formed integrally with either one of the plates, but as here illustrated, the top member is formed integrally with the frontplate, while the remaining members are riveted thereto. The screws 3 pass through clearance holes in the backplate and are screwed into aligned tapped holes formed in the spacing members and the front plate, respectively, the holes in the backplate preferably being countersunk sufficiently to fully receive the heads of the screws. The casing may be mounted on any suitable support, and to facilitate fastening the casing to the support, holes 9 are provided for the reception of fastening devices.

A plate 10 is slidably mounted in the lower part of the casing A between the spacing members 6 and 8, and is provided in its front face with a recess 11 which receives a key 12. The plate 10 is adapted to be moved vertically between upper and lower extreme positions, and the parts are so proportioned that when the plate occupies its upper extreme position in which it is shown in Figs. 1 and 3, the recess 11 will be disposed wholly inside of the casing where the key is inaccessible, but that when the plate occupies its lower extreme position in which it is shown in Fig. 2, the recess will be disposed outside of the casing where the key can be readily removed therefrom. The upper and lower extreme positions of the plate are determined by means of a stop pin 13 which is secured to the plate, and which projects into a vertical recess 14 formed in the backplate 2.

As shown in the drawing, the recess 11 is made just large enough to snugly receive the key 12,

and to facilitate removing the key from the recess, a hole **15** is formed in the key retaining plate **10** through which a finger may be inserted to dislodge the key from the recess. The recess may, however, if desired be made larger than the key and any suitable means may be employed to secure the key in place in the recess.

It will be noted that when the plate **10** occupies its upper extreme position in which it is shown in Fig. 1, the lower end of the plate projects outside of the casing for a short distance, and formed in the forward face of this projecting portion is a notch **16** into which a fingernail may be inserted to facilitate moving the plate to its lowermost position in case it fails to drop by gravity to this position under certain conditions which will be made clear hereinafter.

Extending transversely of the casing A above the plate **10** is a combined latching plate and indicator **18**. The latching plate **18** is slidably mounted in laterally aligned guideways **20** and **21** formed respectively by the confronting ends of the spacing members **5** and **6** and the confronting ends of the spacing members **7** and **8**, and is constantly biased to the right, as viewed in Fig. 3, by means of a compressed coil spring **22**, to a position in which a pin **23** secured to the rear face of the frontplate engages one end of a longitudinally extending slot **24** formed in the latching plate. The biasing spring **22** is disposed partly in the slot **24** and partly in a hole **25** which communicates with the right-hand end of the slot, as viewed in Fig. 2, and is guided within the slot by a guide pin **26** the head of which is interposed between the spring and the pin **23**. The parts are so proportioned that the spring **22** will not become fully compressed until after it is forced entirely into the hole **25**, whereby the slot **24** serves to limit the movement of the latching plate in the direction to compress the spring, as well as in the opposite direction.

Provided in the lower side of the latching plate is an L-shaped slot **27** which forms a latch arm **28**. The slot **27** and latch arm **28** cooperate with an L-shaped latch catch **30** formed on the upper end of the key retaining plate **10** in such manner that the latch catch can fully enter the slot when and only when the key retaining plate occupies its upper extreme position and the latching plate occupies its extreme left-hand position, as viewed in Fig. 2, and that when the latch catch is in the slot, and the latching plate occupies any position but its extreme left-hand position, as viewed in Fig. 3, the latch arm will underlie the latch catch in a manner to prevent the key retaining plate from being moved away from its upper extreme position.

It follows, therefore, that when the key retaining plate **10** is once moved to its upper extreme position, it cannot be moved away from this position until after the latching plate **18** has been moved to its extreme left-hand position, as viewed in Fig. 3, which position I shall hereinafter refer to for convenience as its "unlatching" position.

To facilitate the entry of the latch catch **30** into the slot **27**, the free end of the latch catch is tapered in the manner shown and the free end of the latch arm is similarly tapered and is also rounded at the lower end of the tapered portion.

As will be seen from an inspection of the drawing, the latching plate **18** is somewhat longer than the case A is wide, and provided on the forward face of the latching plate adjacent its right-hand end, as viewed in Fig. 2, is a suitable indication means **18a** which, as here shown, comprises a red disc painted on the latching plate. The parts are so proportioned that this red disc will be visible when the latching plate is moved to its unlatching position, but not when it occupies its normal or latching position in which it is shown in Fig. 1, and to which it is biased by means of the spring **22**.

The key holder also comprises means whereby when the latching plate is moved to its unlatching position, it will subsequently be prevented from returning toward its latching position past an intermediate position in which the disc **18a** is visible, until released by means of a second key not shown. As here illustrated, these means comprise a cylinder lock **31** which is secured within a suitable hole formed in the frontplate **1** above the latching plate, and the inner end of the barrel of which projects into the casing and carries a cam **33**. The cam **33** cooperates with a cam surface **34** formed on a latching dog **35** which is pivotally mounted intermediate its ends on a pin **36** secured to the frontplate **1**. The dog **35** is disposed between the cam and the latching plate, and is biased by means of a spring **37** to such position that the nose of the dog will enter a notch **38** formed in the upper edge of the latching plate whenever the notch aligns with the nose of the dog. The notch **38** is so disposed that it will align with the nose of the dog whenever the latching plate is moved to its intermediate position in which it is shown in Fig. 2, and the parts are so proportioned that if the key retaining plate is moved from its lower position to its upper position when the latching plate occupies its intermediate position, the tapered surface of the latch arm will cooperate with the tapered surface of the latch catch in a manner to cause the latch arm to automatically enter the slot **27** and become latched in its upper position. For convenience, this intermediate position may be referred to as an "indicating" position.

The parts are further so proportioned that if the lock is operated when the dog is in the notch **38**, the cam **33** will rotate the dog to a position in which it is withdrawn from the notch and the lock **31** is so constructed that it can only be operated by the special key referred to hereinbefore. In order to provide adequate clearance for the cam **33**, a recess **40** is formed in the backplate opposite the cam.

The operation of the key holder as a whole is as follows: Normally the parts occupy the positions in which they are shown in Fig. 1. That is to say, the key **12** is disposed in the recess **11** in the key retaining plate **10**, and the plate **10** is latched in its upper position where the key is inaccessible by means of the latching plate **18**, which latter plate under these conditions occupies its extreme left-hand or latching position in which the red disc **18a** is invisible.

When it is desired to obtain the key **12**, the latching plate is pushed to the right as viewed in Fig. 1 to its extreme right-hand or unlatching position, and as soon as the latching plate reaches this position, the key retaining plate will normally drop by gravity to its lower position. If the key retaining plate should fail to drop by gravity to its lower position, it may be pulled downwardly to this position by inserting the fingernail in the notch **16**. As soon as the key retaining plate **10** drops, the latching plate **18** may be released, and the latch dog **35** will then cooperate with the notch **38** to prevent the latching plate from returning, under the bias of the spring **22**, past its intermediate or indicating position in which it

is shown in Fig. 2 and in which the red disc 18a is exposed. When the key retaining plate occupies its lower position, the key 12 can readily be obtained. After the key has been used, it can be replaced in the recess 11, and the key retaining plate can be restored to its upper position. If this is done, the key retaining plate will automatically become latched in its upper position, and if it becomes necessary to again obtain the key, all that needs to be done is to push the latching plate to the right to its unlatching position to again release the key retaining plate.

When the latching plate occupies its indicating position, a telltale is given that the key has been removed from the key holder, and in order to restore the latching plate to its normal position, it is necessary to operate the lock 31 by means of the auxiliary key provided for this purpose. The operation of the lock causes the cam 33 to engage the latching dog 35 and move it out of engagement with the notch 38 in the latching plate 18, whereupon the latching plate will automatically return, under the bias of the spring 22, to its normal position in which it is shown in Fig. 1.

Although I have herein shown and described only one form of key holders embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. A key holder comprising a member movable between a key retaining and a key releasing position, indication means, means for operating said indication means to an indicating position before said member can be moved to its key releasing position, a lock requiring a key for its operation, and means effective when said indication means has been moved to its indicating position for retaining it in such position until said lock is operated.

2. A key holder comprising a member movable between a key retaining and a key releasing position, indication means, means for preventing said member from being moved from its key retaining to its key releasing position until after said indication means has been operated to an indicating position, and means effective when said indication means has been moved to said indicating position for latching it in this position until released by a key provided for that purpose.

3. A key holder comprising a member movable between a key retaining and a key releasing position, indication means, means for preventing said member from being moved from its key retaining to its key releasing position until after said indication means has been operated to an indicating position, a lock requiring a key for its operation, and means effective when said indication means has been moved to said indicating position for latching it in this position until said lock is operated to release it.

4. A key holder comprising a casing, a key retaining plate provided with a recess for receiving a key and slidably mounted in said casing for movement between a first position in which said recess is disposed inside of said casing and a second position in which said recess is disposed outside of said casing, a latching plate movable between a first position in which it prevents movement of said key retaining plate away from its first position and a second position in which said key retaining plate is free to move to its second position, means effective when said latching plate is moved to its second position for returning it to and latching it in an intermediate position, lock controlled means for releasing said latching means, and means for providing a visible indication when said latching plate occupies its intermediate position.

5. A key holder comprising a casing, a key retaining plate provided with a recess for receiving a key and slidably mounted in said casing for movement between a first position in which said recess is disposed inside of said casing and a second position in which said recess is disposed outside of said casing, a combined latching and indication plate slidably mounted in said casing and biased to a latching position and movable from its latching position through an indicating position to an unlatching position, means on said latching plate cooperating with means on said key retaining plate for latching said key retaining plate in its first position when said latching plate occupies any position but its unlatching position, and means effective after said latching plate has been moved to its unlatching position for preventing it from moving toward its latching position past its indication position until released by a key provided for that purpose.

6. A key holder comprising a casing, a key retaining plate provided with a recess for receiving a key and slidably mounted in said casing for movement between a first position in which said recess is disposed inside of said casing and a second position in which said recess is disposed outside of said casing, a combined latching and indication plate slidably mounted in said casing and biased to a latching position and movable from its latching position through an indicating position to an unlatching position and provided with indication means which is visible when said latching plate occupies its indicating or unlatching position but not when it occupies its latching position, means on said latching plate cooperating with means on said key retaining plate for latching said key retaining plate in its first position when said latching plate occupies any position but its unlatching position, and means effective after said latching plate has been moved to its unlatching position for preventing it from moving toward its latching position past its indicating position until released by a key provided for that purpose.

7. A key holder comprising a casing, a key retaining plate provided with a recess for receiving a key and slidably mounted in said casing for movement between a first position in which said recess is disposed inside of said casing and a second position in which said recess is disposed outside of said casing, a combined latching and indication plate slidably mounted in said casing and biased to a latching position and movable from its latching position through an indicating position to an unlatching position, means on said latching plate cooperating with means on said key retaining plate for latching said key retaining plate in its first position when said latching plate occupies any position but its unlatching position, a notch in said latching plate, a dog biased to such position that it will enter said notch when said latching plate occupies its indicating position and will prevent it from moving due to its bias to its latching position, and lock controlled means for at times operating said dog to release said latching plate.

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