United States Patent

[11] **3,572,063**

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[54] **TAMPER-PROOF SEAL RETAINING LOCKS**
4 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **70/50,** 70/423, 70/440
[51] **Int. Cl.** **E05b 67/38,** E05b 171/4, E05b 39/02
[50] **Field of Search** 70/50, 54, 440; 292/328, 329, 330, 331; 70/52, 38, 448, 449, 451, 416, 423

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ABSTRACT: For goods or materials which are shipped or stored under seal there is provided a key-actuated lock formed on one wall with a channel plate having an opening therein registering with the keyway of the lock. The channel plate is adapted to hold over the lock keyway and in guarding relation thereto, a portion of a sealing element. As long as the sealing element remains intact and in position it is impossible for a tamperer to gain unauthorized access to the lock keyway. However, if the seal should be removed or broken, thus giving visual evidence of tampering, the lock must, nevertheless, be illegally opened to give a tamperer access to the protected goods, thereby providing double security.

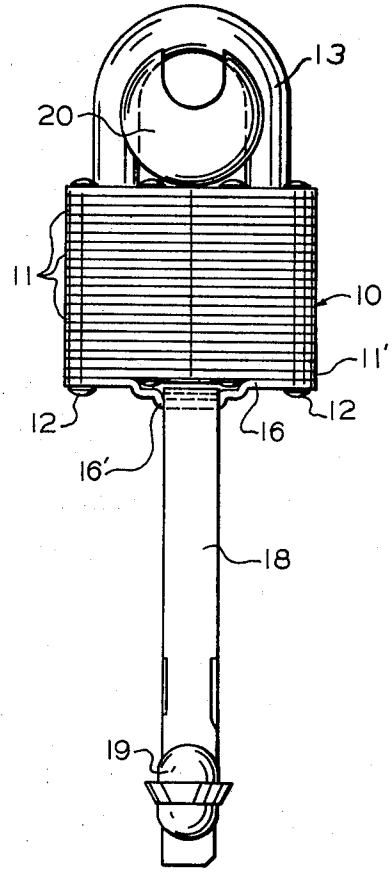


FIG - 1

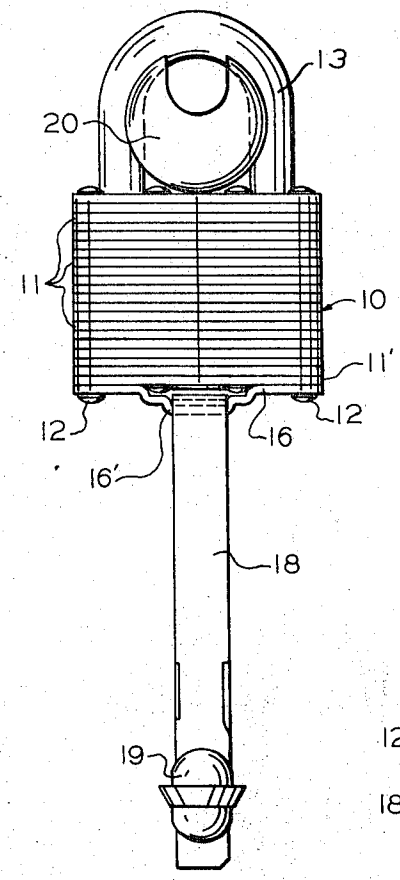


FIG - 2

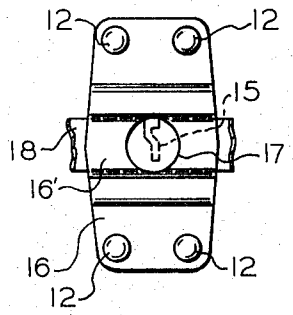


FIG - 3

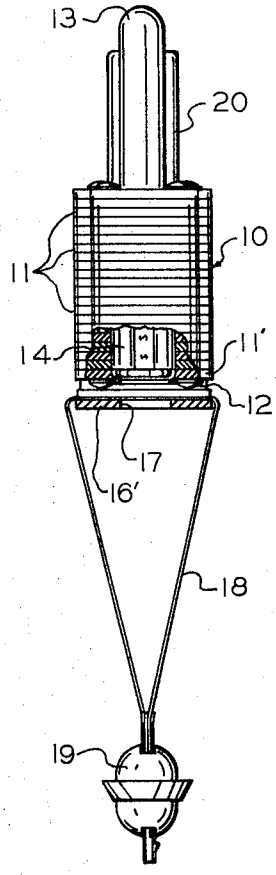


FIG - 4

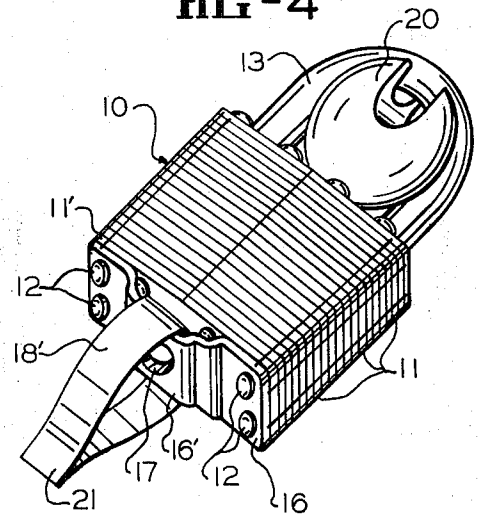


FIG - 5

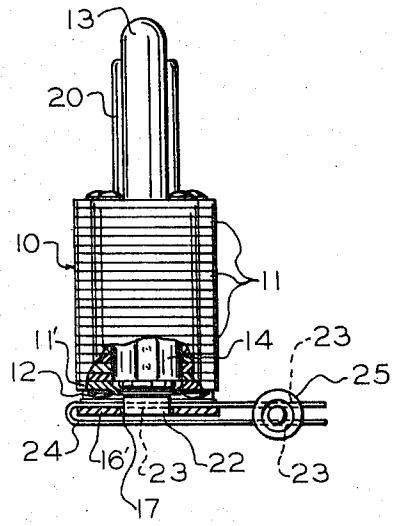
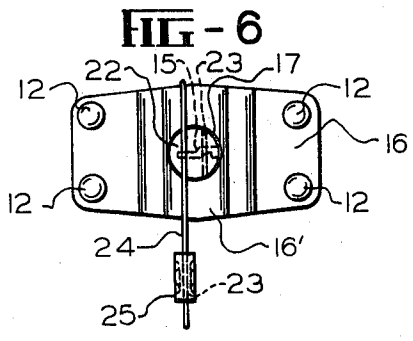


FIG - 6



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TAMPER-PROOF SEAL RETAINING LOCKS

BACKGROUND OF THE INVENTION

For security purposes seals are customarily provided for box cars, trucks, money bags, gas and electric meter boxes, tool kits, government bonded vats for distillery products, and like devices whereby goods in shipment or in storage are protected. However, such shipment and storage facilities do not have seal associated locks and are protected against tampering solely by the sealing device. Hence, if the latter is broken unauthorized access to the goods is immediately possible. The sealing device if broken or removed only serves the purpose of indicating to an authorized shipper, consignee or government representative that the goods may have been pilfered or tampered with. The present seal retaining lock, besides maintaining the sealing device in tamper-proof relation to the lock keyway, and permitting the seal to function in its intended manner, provides, in addition to the seal, a lock for the stored goods which must be unauthorizedly opened before a tamperer can gain access to the goods.

Preferably, the improved tamper-proof seal retaining lock is a padlock equipped with a shackle guard of such a nature that it will preclude shimming of the shackle legs or the insertion of a bar or tool to apply prying force to the shackle to gain its release. Therefore, in the improved tamper-proof seal retaining lock, if the sealing means is not tampered with or removed it will block unauthorized access to the keyway of the lock so that the same cannot be opened by picking or with the use of a surrepticiously obtained key. Additionally the shackle guard will thwart unauthorized attempts to release the lock by tampering with the shackle, as above explained.

Another object of the invention is to provide a padlock formed with means for retaining any of a number of types of sealing devices in blocking relation to the keyway of the padlock.

Still further objects of the invention are to provide in a lock, a seal retaining means which requires a minimum of modification of the lock to which it is applied, the improvements being readily incroporated in locks of various types and sizes, and furthermore being simple, inexpensive, neat and attractive in appearance, and well suited for the purposes described.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings wherein the same reference characters designate the same or similar parts in all of the views:

FIG. 1 is a front view of a padlock formed with a tamper-proof retaining means for a metallic sealing strip;

FIG. 2 is a bottom view of the showing in FIG. 1 only with the extents of the metallic sealing strip in section;

FIG. 3 is a side view of the showing in FIG. 1 with a lower portion of the lock body being broken away and in section;

FIG. 4 is a perspective view of the padlock of FIG. 1 only with the seal retaining means carrying an adhesive plastic sealing strip;

FIG. 5 is a side view of a padlock formed with the tamper-proof seal retaining means wherein the latter retains over the keyway a lead disc seal engaged by an inserted wire secured by another disc, the lower portion of the lock body being broken away and in section; and

FIG. 6 is a bottom view of the modification of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Merely by way of illustration the tamper-proof seal retaining means of the present invention is shown as being incorporated in a padlock having a laminated body **10**, the same being formed of a plurality of superimposed laminations or plates **11** held together by rivets **12**. The padlock includes the usual inverted U-shaped reciprocatable shackle **13** wherein a leg thereof is held in locked condition within a shackle recess therefor in the body by a locking lever (not shown). Within the body **10** housed within a cavity therefor is a key-actuated pin tumbler cylinder assembly **14** having a keyway **15** which opens through the lowermost normal plate **11'** of the body.

Entry of a key (not shown) into the keyway **15** and a turn imparted thereto is effective to so operate the pin tumbler cylinder assembly and its appurtenances that the locking lever will release the shackle **13**, all as is conventional.

To adapt the lock body **10** to the tamper-proof retention of a sealing device there is applied to the lowermost body plate **11'** a channel plate **16** which conforms in size and proportions to the plate **11'** which it underlies, and it is held to the assembled body plates **11** and **11'** by the aforementioned rivets **12**. Said channel plate **16** has a downwardly offset midportion **16'** formed with a circular opening **17** therein substantially conforming in size and shape to the lower accessible end portion of the lock cylinder assembly **14** so, that when said channel plate opening **17** is not obstructed, access to the keyway **15** is afforded.

In the form of the invention shown in FIGS. **1**, **2**, and **3** the offset portion **16'** of the channel plate **16** is adapted to have threaded between it and the exposed end of the cylinder assembly **14** (and the lowermost normal body plate **11'**) a metal car seal strip **18** of conventional form. The car seal strip is of the type commonly used for sealing the entrances to box cars, trucks, warehouses and government bonded alcohol or liquor vats, and may bear the shippers name or other identifying indicia including consecutive numbers or the like. This car seal strip **18** should have its free ends brought together and arranged relative to the lock body **10** in any conventional manner, the arrangement thereof shown in FIGS. **1** and **3** merely being by way of example. A conventional clasp or holding device **19** receives the ends of the strip **18** and is of a nature that it cannot be opened to release the ends of the strip **18**. Consequently, the metal seal strip can only be released or removed if it is cut, broken or similarly mutilated. Thus the intactness of the seal strip is intended to give visual evidence that the goods in shipment or storage have not been illegally pilfered or tampered with. The last-mentioned objective is the normal function of a car seal strip and if it should be cut or removed unauthorized access to the goods supposedly protected thereby, is possible. However, by combining a seal strip with the lock body **10** which is equipped with the improved seal retaining means (the channel plate **16**) double security is afforded.

As will be clear from FIGS. **1**, **2**, and **3** not only does the seal strip function in its normal manner, but, being associated with a lock which guards the goods in transit or storage, even if the seal device is illegally removed or broken, the tamperer still has to contend with the lock. As an added safety factor, as long as the seal strip **18** is intact and associated with the lock and channel plate **16**, its midportion overlies and covers the lock keyway **15**. This will prevent a tamperer from attempting to pick the lock or to insert into the keyway a surrepticiously obtained key or tool.

As an additional safety factor there may be included within the outline of the closed padlock shackle **13** a shackle guard **20** of the type disclosed in the Daniel J. Foote application for Padlock Shackle Guards, Ser. No. 720,833. Thus, the shackle guard **20** will prevent attempts to "shim" the shackle legs or to unauthorizedly release the shackle through the use of a prying tool or lever.

In the form of the invention shown in FIG. **4** all of the components are the same as those described in connection with FIGS. **1**, **2**, and **3** except that the seal strip **18'** which is threaded between the top surface of the channel plate portion **16'** and the body plate **11'** is an elongated extent or strip of an adhesive plastic seal material. Its adjacent free ends, carrying an adhesive on their inner surfaces are merely pressed together as at **21**. The adhesive thereon is of a type which defines release or separation of the adhered areas. Hence, said seal strip **18'** can only be removed from the lock body and channel plate **16** by cutting or severing said strip, which will visually indicate that the protective seal for the goods has been broken.

Another modified form of the invention is shown in FIGS. **5** and **6**. There, the channel plate **16** carried by the bottom of

the lock body **10** over the keyway **15** is adapted to have lodged in its opening **17** a sealing element **22** which takes the form of a circular lead disc having bores **23** in its body. One of the latter has passed therethrough a leg of an elongated U-shaped securing wire **24**, arranged as shown with its other leg extending transversely of the outer face of the offset portion **16'** of the plate **16**. A similar lead disc **25** is utilized for securing together the free end portions of the legs of the securing wire **24**, the latter being passed through the bores **23** in said disc **25**. When said disc **25** is squeezed and deformed by a suitable tool applied thereto it cannot be removed from the legs of the U-shaped wire **24** and the latter cannot thus be disengaged from the keyway sealing disc **22**. Hence, as long as the condition of FIGS. **5** and **6** attains, the sealing arrangement of this modification remains intact, and unauthorized access to the keyway **15** of the lock is prevented.

From the foregoing description it will be evident that, pursuant to the present invention a key-actuated lock is provided which includes means for retaining a sealing device in tamper-proof relation over the keyway of the lock. The seal retaining lock affords double protection for goods in shipment or storage, is simple to apply and use, warns away and thwarts would-be tamperers, and is otherwise well adapted for the purposes described.

I claim:

1. In a lock having a laminated body with an element of a lock mechanism actuator extending through an end lamination plate of the body in a normally exposed condition, the combination of: a channel plate secured to said body in underlying relation to said end lamination plate and conforming to the latter in size and proportion and having an outwardly offset midportion with an opening therein in outwardly spaced relation to the lock mechanism actuator; and a seal held by the offset midportion of said channel plate in covering relation to the lock mechanism actuator.

2. The combination recited in claim **1** wherein the exposed element of the lock mechanism actuator is a keyway and the seal is an elongated strip looped over the offset midportion of said channel plate with the ends of the strip permanently secured together.

3. The combination recited in claim **1** wherein the lock is a shackle-equipped padlock with the shackle projecting from a wall of the body opposite that formed by said channel plate, the shackle having a tamper resisting guard mounted within its outline.

4. The combination recited in claim **1** wherein the seal is a bored disc lodged in the opening in the midportion of the channel plate with a U-shaped securing element having one of its legs extended through a bore in said disc and having its other leg transversely underlying the outer face of the offset midportion of said channel plate, with means for securing together the free ends of the legs of said U-shaped securing element.