Nov. 4, 1969 S. REISNER 3,475,934

LOCK-OUT KEY ASSEMBLY

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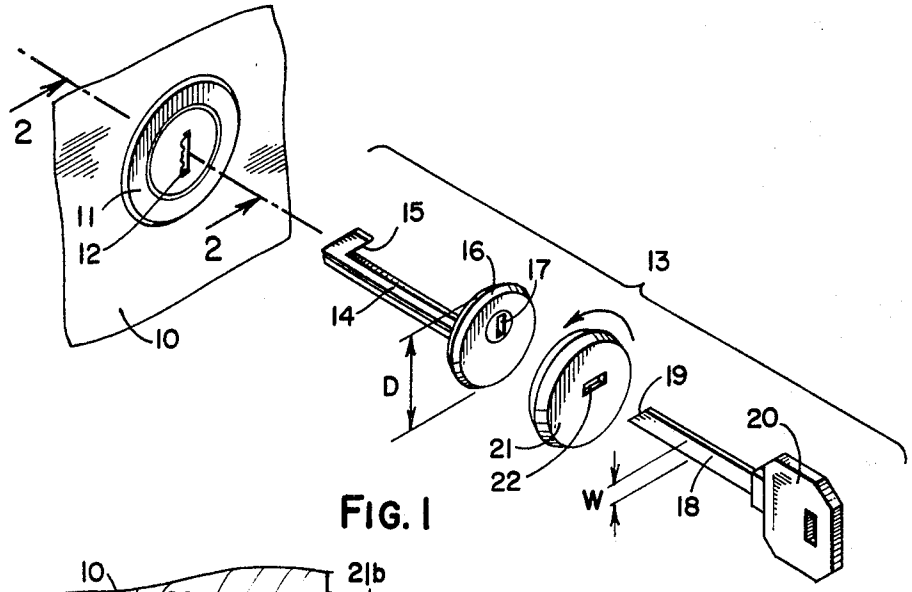


FIG. 1

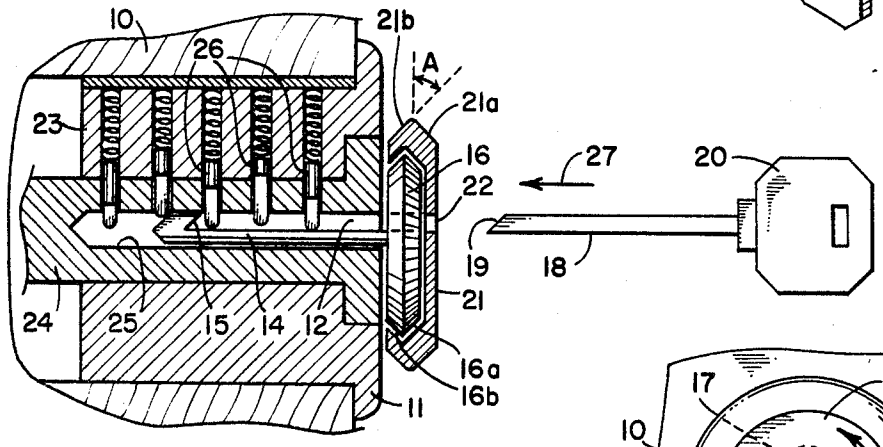


FIG. 2

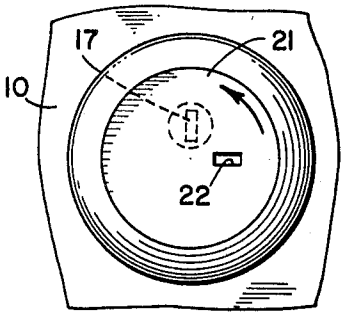


FIG. 4

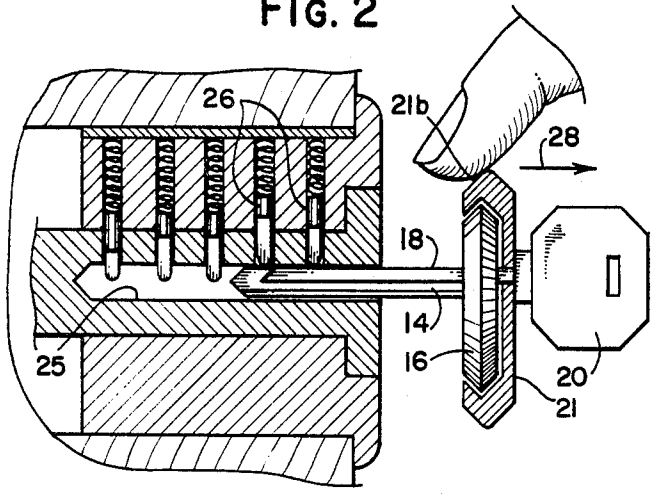


FIG. 3

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LOCK-OUT KEY ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A lock-out key assembly includes a lower half key shaft terminating in a hook at one end and a disc shaped head at the other end, the plane of the head being normal to the lower half key shaft. This lower half key shaft is inserted in the key way of a lock and one of the tumblers will engage the hook and secure the half key shaft within the lock with the disc shaped head covering the exterior entrance portiton of the key way. When it is desired to remove the lock-out key shaft, a mating upper half key shaft is inserted through a slot in the disc shaped head and effects disengagement of the lock tumbler with the hook, the lower and upper half key shafts defining a blank key which may then be readily removed.

This invention relates generally to lock-out key assemblies and more particularly to an improved lock-out assembly for use with locks normally provided with transversely movable interference elements in the keyway such as tumblers or wafers.

Lock-out key assemblies are well known in the art and in essence serve to at least partially block the key-hole of a conventional lock to thereby inhibit picking of the lock. Most of the presently available lock-out assemblies are in the from of a blank key having its shaft split longitudinally to define lower and upper half key shafts. The dividing line terminates in a hook or V shape so that the lower half key shaft includes a laterally projecting hook or portion which will be engaged by a tumbler or other interference element in the lock when the lower half key shaft is inserted in the lock keyway. This lower half key shaft is thus retained in the keyway and cannot be removed without utilizing the mating upper half key shaft. Subsequent insertion of the upper half key shaft will effect disengagement of the tumbler or interference element with the hook on the lower half key shaft and permit withdrawal of the two shafts as a unit.

While lock-out key assemblies such as described above have been successful, there have been encountered certain problems in their use. First, the design of presently available lock-out devices is such that their presence in a lock cannot readily be detected with the result that a person will nevertheless attempt to pick the lock. As a consequence, the lower half key shaft may become inextricably wedged in the keyway of the lock and thus render the lock useless.

In addition to the foregoing, there has been encountered in certain instances a problem in removing the lower half key shaft even with the upper half key shaft properly inserted for effecting disengagement of the tumblers. This difficulty resides in the relatively small extending portion of the lower half key shaft for providing a grip area in removing the same.

Finally, while a keyway may be partially blocked by the presently available lock-out type assemblies, the remaining portion of the keyway and key slot is exposed to the elements and should the lock-out device remain in position for any considerable length of time, particularly on outside locks, there is again presented the problem of possible weathering of the lower half key

shaft in place in the keyway or the keyway itself becoming clogged with dust and dirt and thus rendering the removal of the lockout device very difficult.

With all of the foregoing considerations in mind, it is a primary object of the present invention to provide an improved lock-out key assembly wherein the above problems are overcome.

More particularly, it is an object to provide an improved lock-out key assembly having a unique head portion which will render obvious the presence of the lock-out device in a lock so that a would-be intruder will be discouraged from the start.

Another object is to provide an improved lock-out key assembly having a novel head portion designed to cover substantial areas of the lock adjacent to the keyway opening and which is so designed as to facilitate easy manual gripping thereof to facilitate removal of the lock-out device when the mating upper half key shaft is used so that both adequate protection of the keyway slot and easy removal are realizable even should the lower half key shaft portion be left in place for a considerable length of time.

Still another important object is to provide an improved lock-out key assembly including a dust cover receivable over a uniquely shaped head for the lower half key shaft portion which will provide adequate protection of the assembly and the keyway of the lock itself from dirt and dust and the like and also define an easy gripping surface to facilitate removal of the assembly.

Briefly, these and other objects and advantages of this invention are attained by providing an assembly including a lower half key shaft terminating at one end in a hook means and at its other end in a disc shaped head. The plane of the head is normal to the lower half key shaft and is rigidly or even integrally formed therewith. The head includes an upper half key shaft slot passing normally therethrough designed to receive an upper half key shaft. This upper half key shaft terminates at one end in a sloping surface receivable in the hook means and the entire upper half key shaft is dimensioned to mate with the lower half key shaft such that when inserted through the slot in the head, the assembly of the shaft defines a key blank.

With the foregoing arrangement, the lower half key shaft may be inserted in the elongated keyway of a lock to an extent that one of the transversely movable interference elements of the lock, such as a tumbler, will be engaged by the hook means thereby preventing withdrawal of the lower half key shaft. When in this position, the disc shaped head covers the peripheral areas of the lock about the entrance to the keyway over 360° and thus provides excellent protection therefor.

When it is desired to remove the lock-out device, the upper half key shaft is inserted through the upper half key shaft slot in the disc shaped head and will effect disengagement of the one of the transversely movable interference elements from the hook means on the lower half key shaft thereby permitting withdrawal of the lower half key shaft and upper half key shart as a unit from the keyway. The disc shaped head includes a reduced diameter sloping portion facing the lock to define a convenient gripping surface for the user when removing the assembly from the keyway.

An additional feature of this invention contemplates the provision of a dust cover rotatably mounted over the disc shaped head. This dust cover is provided with a key slot which is caused to register with the slot opening in the disc shaped head when the cover is rotated to a given position. By rotating the dust cover to a position different from the given position, the slot in the disc shaped head is totally eclipsed and thus protected from dust and dirt. The dust cover itself may have its periphery so shaped

as to facilitate easy withdrawal of the entire assembly from the lock.

A better understanding of the invention and the various features and advantages thereof will be had by now referring to a preferred embodiment as illustrated in the accompanying drawings, in which:

FIGURE 1 is a fragmentary, exploded, perspective view of a lock and lock-out key assembly in accord with the invention;

FIGURE 2 is a fragmentary view partly in cross section of the lock of FIGURE 1 taken in the direction of the arrows 2—2 and showing the lock-out portion of the lock-out assembly in position in the keyway to effect a blocking of the keyway;

FIGURE 3 is a view similar to FIGURE 2 but illustrating the relative positions of the lock mechanism and lock-out assembly during withdrawal of the assembly from the lock; and

FIGURE 4 is a fragmentary front elevational view of the lock-out assembly in position in the keyway.

Referring first to FIGURE 1 there is shown in the upper left hand portion of the drawing a fragmentary portion of a door **10** incorporating at lock **11**. The lock keyway entrance opening is indicated at **12** and is designed to receive a particular type key designed for the lock in question. The lock may constitute a conventional tumbler or wafer type lock wherein there are provided transversely movable elements individually positionable to given positions by the proper key to enable unlocking of the lock.

Referring now to the exploded portion of FIGURE 1 there is indicated at **13** the lock-out key assembly of the present invention. This assembly includes a lower half key shaft **14** terminating at one end in a hook means **15** and at its other end in a disc shaped head **16**. It will be clear from FIGURE 1 that the plane of the head **16** is normal to the lower half key shaft **14**, the disc shaped head itself being rigidly secured to the near end of the shaft **14**. This disc includes an upper half key shaft slot **17** passing normally therethrough.

The slot **17** is arranged to receive an upper half key shaft **18** terminating in a sloping end **19** receivable in the hook **15** such that when the shaft **18** is passed through the slot **17**, the lower and upper half key shafts **14** and **18** will define essentially a blank key structure or assembly. A convenient holding head **20** is provided on the upper half key shaft **18** as shown.

While not an essential part of the present invention, the lock-out key assembly contemplates the provision of a dust cover **21** which may be peened over the disc shaped head **16** in a manner such as to be rotatably mounted thereon. As indicated in FIGURE 1, the dust cover includes a key slot **22** which may be caused to register with the slot **17** in the head **16** by suitably rotating the dust cover to a given position. In FIGURE 1, the relative position of the dust cover is shown at 90° to this given position so that when the dust cover is positioned as shown, the slot **17** in the disc shaped head **16** will be eclipsed by the cover.

Referring now to FIGURE 2, there is illustrated the manner in which the lock-out assembly operates to effectively block the key slot **12**. As shown, the lock structure **11** itself includes a lock body **23** provided with a central bore for receiving a locking cylinder **24**. The cylinder **24** includes an elongated keyway **25** terminating at its right hand end in the key slot entrance **12**. Suitable transversely movable interfering elements such as tumblers **26** are disposed within transverse aligned bores in the lock body **23** and cylinder **24**. As indicated, each of the elements or tumblers are spring loaded in a downward direction so that they are biased into the keyway **25**. Each tumbler really constitutes a split pair of tumblers, the dividing line being positioned in accord with the unlocking code for the lock.

When a conventional key having indentations along the upper edge of its shaft is inserted in the keyway **25**, the lower ends of the tumblers will be received in the indentations and if the key is properly designed for the lock, the given positioning of the tumblers by the key will result in their division points between the respective pairs being aligned with the division line between the periphery of the lock cylinder **24** and the bore in the body **23**. The lock cylinder **24** may then be turned.

When the lock-out assembly of the present invention is employed, the lower half key shaft **14** is inserted in the keyway and it will be clear that the terminal sloping end will urge the various tumblers upwardly as the shaft progresses through the keyway. At least one of the tumbler elements will be engaged by the hook portion **15** after this hook portion passes the tumbler so that withdrawal of the lower half key shaft will be prevented.

For clarity of illustration in FIGURE 2, the lower half key shaft and disc shaped key head are shown in full lines while the dust cover **21** is shown in cross section. It will be noted in FIGURE 2 that with the lower half key shaft in position in the keyway, the disc shaped head **16** covers a substantial peripheral area of the key slot entrance **12** and thus protects the same. To assure adequate protection over 360° about the slot, the diameter of the disc shaped head **16** is made greater than twice the width of the upper half key shaft portion. These respective dimensions are indicated by the letters D and W in FIGURE 1.

In the view of FIGURE 2, it will be noted that the periphery of the disc shaped head includes first and second beveled surfaces **16*a*** and **16*b***. The beveled surface **16*b*** is in a direction to define a reduced diameter portion for the disc shaped head **16** facing the lock when the lower half key shaft **14** is inserted in the keyway. There is thus defined a convenient gripping surface for enabling a manual withdrawing or retraction force to be exerted on the assembly.

In the particular embodiment described, the dust cover **21** is shown about the disc shaped head **16**. In order to retain the advantage of a convenient gripping surface, the periphery of the dust cover itself preferably includes sloping or beveled type first and second surfaces **21*a*** and **21*b***.

Again it will be noted that the surface **21*b*** slopes inwardly to define a surface portion facing the lock for easy manual gripping in removing the assembly. The dust cover as illustrated in FIGURE 2 has been rotated to a given position in which its slot **22** is in registration with the slot **17** in the head **16**. Normally, the dust cover would be rotated to a position other than this given position so that the cover itself would eclipse the slot **17**.

It will be clear that with the lower half key shaft and disc shaped head positioned as shown in FIGURE 2, the lock is rendered substantially tamper-proof and further, the entrance to the keyway **12** is adequately protected.

When it is desired to remove the lock-out device in order that the proper conventional key may be employed to open the lock, the upper half key shaft **18** is inserted through the slot **22** in the dust cover, after properly aligning the same with the slot **17**, and urged along the top of the lower half key shaft **14** until the sloping end portion **19** of the upper half key shaft **18** is received within the hook **15**.

With reference to FIGURE 3, it will be noted that when the upper half key shaft **18** is positioned as described, the lower and upper halves **14** and **18** esentially define a key blank. Further, it will be evident that upon insertion, the sloping surface **19** of the uper half key shaft **18** will urge the various tumblers upwardly so that the tumbler engaged by the hook **15** is caused to disengage this hook.

After the upper half key shaft has been inserted all the way along the lower half key shaft **14** so that the sloping portion **19** is received in the hook **15**, the entire assembly may then readily be removed from the keyway. This removal is illustrated in FIGURE 3 wherein a per-

son may simply place his finger on the sloping beveled surface **21***b* and withdraw the entire assembly.

In the event the dust cover is not incorporated as part of the key assembly, a user would cause his finger to engage the surface **16***b* of the disc shaped head **16** itself.

FIGURE 4 illustrates the desired position of the dust cover **21** relative to the slot **17** in the disc shaped head when the lock-out device is in place. As shown, the slot opening **22** in the dust cover is out of registration with the slot **17**. When the dust cover is rotated as described, the slot **22** may be brought into registration with the slot **17** preparatory to inserting the upper half key shaft portion of the assembly.

From the foregoing, the operation of the lockout assembly will be evident. With reference once again to FIGURES 2 and 3, the lower half key shaft and disc is inserted into the keyway **25** by moving the same in the direction of the arrow **27**. This operation automatically locks the lower half key shaft in the keyway as by action of the tumbler engaging the hook **15**. The dust cover is then rotated to the position such as illustrated in FIGURE 4 so that the slot opening **17** in the head is eclipsed and thus protected from dirt and dust.

Then it is desired to remove the assembly the dust cover is rotated to its given position to cause its slot **22** to register with the slot **17** and the upper half key shaft **18** inserted. After effecting the necessary disengagement of the tumbler with the hook, the entire assembly is withdrawn in the direction of the arrow **28** as shown in FIGURE 3.

From the foregoing description, it will be evident that the present invention has thus provided a greatly improved lock-out key assembly wherein all of the various objects set forth heretofore are fully realized.

What is claimed is:

1. For a lock having an elongated keyway and transversely movable interference elements adapted to be individually adjusted to given positions upon insertion of a key to enable unlocking of said lock, an improved lock-out key assembly for blocking at least part of the entrance of said keyway, said assembly comprising: a lower half key shaft terminating at one end in a hook means and at its other end in a disc shaped head, the plane of said head being normal to said lower half key shaft, said head having an upper half key shaft slot passing normally therethrough; and an upper half key shaft terminating at one end in a sloping surface receivable in said hook means, said upper half key shaft being dimensioned to mate with said lower half key shaft such that when inserted through said upper half key shaft slot, the assembly of the shafts defines a key blank, whereby said lower half key shaft may be inserted in said elongated keyway to an extent that one of said transversely movable interference elements will be engaged by said hook means thereby preventing withdrawal of said lower half key shaft, said disc shaped head covering the peripheral areas of said lock about the entrance to said keyway over 360°, and whereby said lower half key shaft may be removed by subsequently inserting said upper half key shaft through said upper half key shaft slot in said disc shaped head to effect disengagement of said one of said transversely movable interference elements from said hook means thereby permitting withdrawal of said lower half key shaft and upper half key shaft as a unit from said keyway, said disc shaped head having a beveled periphery to define a lesser diameter portion closer to said lock when said lower half key shaft is inserted to thereby provide a convenient gripping surface to facilitate manual withdrawal of said assembly.

2. The subject matter of claim **1**, in which the diameter of said disc shaped head is greater than twice the width of said upper half key shaft.

3. The subject matter of claim **1**, in which said lock-out key assembly further includes a circular dust cover fitted over said disc shaped head and rotatable thereon, said cover having a slot adapted, upon rotation of said dust cover to a given position, to register with said upper half key shaft slot in said disc shaped head, whereby said dust cover may be rotated to a position other than said given position to eclipse said upper half key shaft slot in said disc after said lower half key shaft has been inserted in said keyway.

4. The subject matter of claim **3**, in which the periphery of said dust cover is peened over said beveled periphery of said disc shaped head to define an inwardly sloping surface facing said lock to provide a gripping portion to facilitate manual removal of said lock-out key assembly as a unit from said lock.

References Cited

UNITED STATES PATENTS

962,276	6/1910	Voight	70—372
1,728,310	9/1929	Sundel	70—428

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U.S. Cl. X.R.

70—455, 395