United States Patent

[11] 3,628,356

[72] Inventor **George L. Deahl**
836 North Hollywood Way, Burbank, Calif. 91505

[21] Appl. No. **30,920**
[22] Filed **Apr. 22, 1970**
[45] Patented **Dec. 21, 1971**

[54] **DOOR LOCK PROTECTION DEVICE**
4 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **70/449,** 70/452, 70/461
[51] **Int. Cl.** **E05b 9/04,** E05b 15/02
[50] **Field of Search** 70/86, 99, 370, 373–375, 379, 381, 449, 451, 452, 461; 248/27

[56] **References Cited**

UNITED STATES PATENTS

180,894	8/1976	Leach	70/452 X
2,257,741	10/1941	Gray	70/379 R X
2,278,044	3/1942	Scanlan	70/134
2,676,051	4/1954	Hillgren	70/451 X
2,938,373	5/1960	Gray	70/86
2,962,888	12/1960	Ahlquist	70/86
3,349,585	10/1967	Walters	70/86

FOREIGN PATENTS

825,218	12/1951	Germany	70/370

Primary Examiner—Robert L. Wolfe
Attorney—Allan M. Shapiro

ABSTRACT: An escutcheon which surrounds and centers the cylinder in a door lock and has integrally formed therewith a tubular securement cylinder which extends through the lock hole in the door. The tubular securement cylinder has a transverse hole through at least one wall. This transverse hole is in alignment with the latch housing and intersects the cylinder axis so that the latch housing extends through the securement cylinder wall to prevent rotation and removal of the escutcheon and securement cylinder and prevent burglar access to the latch.

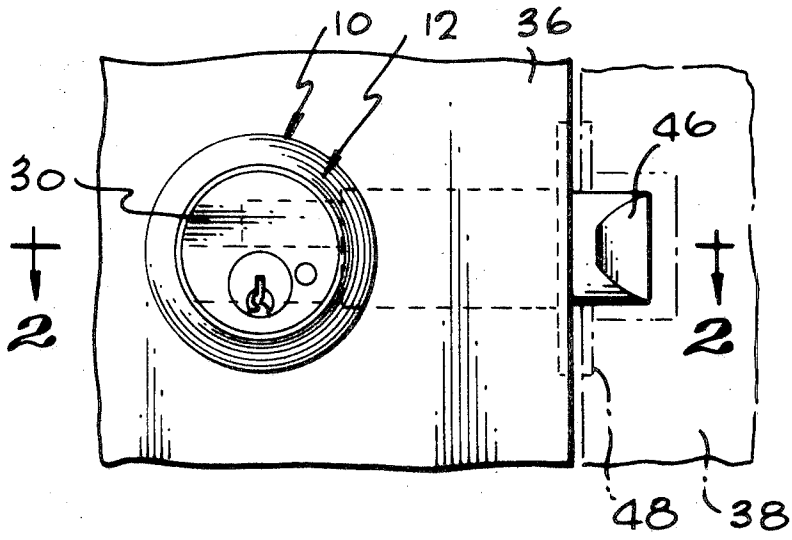


Fig. 1

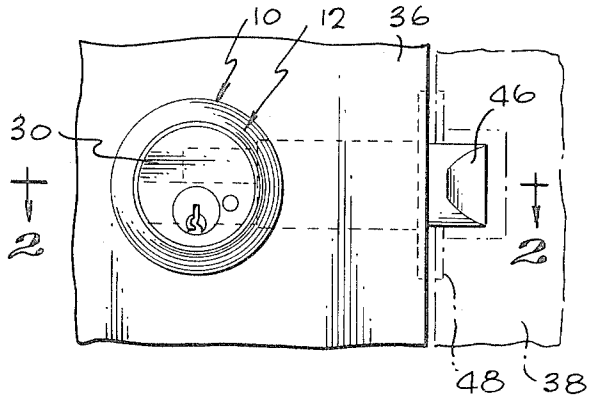


Fig. 4

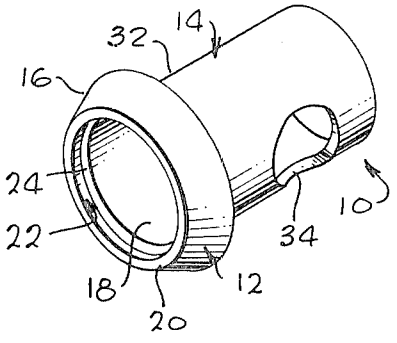


Fig. 2

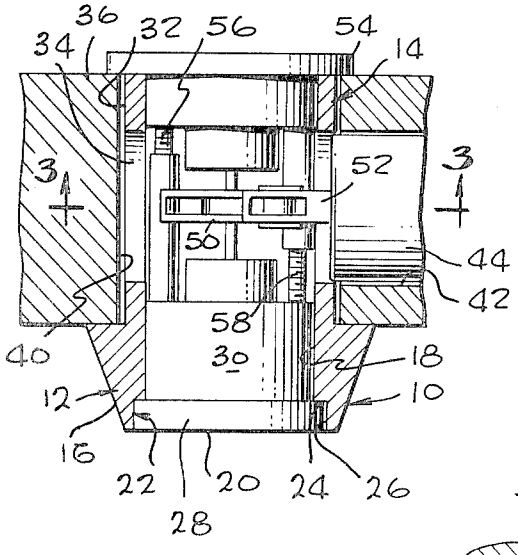


Fig. 3

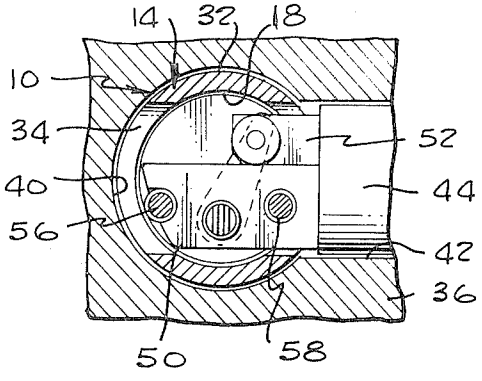


Fig. 7

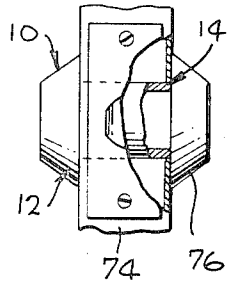


Fig. 6

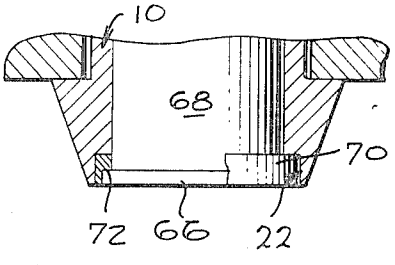
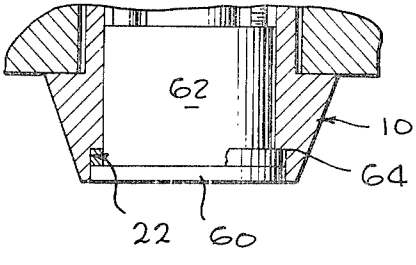


Fig. 5



GEORGE L. DEAHL
INVENTOR.

BY Allan M. Shapiro

ATTORNEY

DOOR LOCK PROTECTION DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention is directed to a door lock protection device and especially to an escutcheon which surrounds and centers the conventional lock cylinder in a door lock, which escutcheon is secured against removal from the face of the door.

2. Description of the Prior Art

The present manner of installation of most locks on office and apartment doors includes the installation of a decorative escutcheon around the lock cylinder. This decorative escutcheon is positioned to center the lock cylinder with respect to a lock hole through the door, and to be sufficiently large on the door face surface of the escutcheon to engage around the hole to cover imperfections which may have arisen during hole formation. The outer end of the escutcheon receives the lock cylinder.

Doors with such lock structures are subject to entry by burglars known as "wrenchers." The wrenchers employ a fairly simple tool, such as an ordinary pair of pliers, and wrench off the escutcheon. These escutcheons are primarily for decorative purposes and, therefore, they are made of light metal which can be twisted and pulled away from its normal position between the lock cylinder and the door face. Once the decorative escutcheon is pulled away from this interface, a slim tool can be employed for access to the link structure interconnecting the cylinder with the bolt or latch. Thus, the bolt can be operated with a slim tool extending past the lock cylinder, from the front face of the door, through the space formerly occupied by the decorative escutcheon. Once the bolt is operated in the withdrawal direction, the door can be opened in the usual way.

In some of the prior art door locks, the escutcheon has sufficient strength to withstand normal wrenching forces intended to deform or remove the escutcheon by itself. In such cases, burglars often are able to employ a wrench upon the escutcheon and figuratively rip out the lock cylinder so as to expose the latch for ready access.

SUMMARY OF THE INVENTION

In order to aid in the understanding of this invention, it can be stated in essentially summary form that it is directed to a door lock protecting device. The door lock protecting device comprises an escutcheon which normally engages a door face and supports a lock cylinder. A tubular securement cylinder is integrally formed with the escutcheon and extends into the door from the face thereof. An opening through at least one wall of the tubular securement cylinder is positioned to receive the door bolt or latch so that, when the door bolt is installed into the tubular securement cylinder, both the securement cylinder and the escutcheon are locked in place. Access to the latch by a burglar thus can be accomplished only by breaking the door itself.

Accordingly, it is an object of this invention to provide a door lock protection device which comprises an escutcheon which surrounds the lock cylinder and which is engaged with respect to the door so that the escutcheon cannot be wrenched away. It is a further object to provide a door lock protection device wherein the escutcheon is integrally formed with a tubular securement cylinder which has a transverse opening therein, the transverse opening intersecting the cylindrical axis and being positioned to receive a bolt so that, when the bolt is in position, the escutcheon cannot be rotated or otherwise moved with respect to the bolt. It is still another object of this invention to provide an ornamental but inexpensive and trouble-free door lock protection device which overcomes a deficiency in many of the lock structures presently in use. It is a further object to provide additional security by providing greater lock security.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may be understood best by reference to the following description, taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of the door lock protection device of this invention in its installed environment.

FIG. 2 is an enlarged view, taken partly in plan and partly in section along line 2—2 of FIG. 1.

FIG. 3 is a view taken partly in elevation and partly in section along line 3—3 of FIG. 2.

FIG. 4 is a perspective view of the door lock protection device of this invention.

FIGS. 5 and 6 are fragmentary sectional views showing the door lock protection device of this invention employing spacer rings for use with differing lock cylinder constructions.

FIG. 7 is an elevational view, with parts broken away and in section, showing the door lock protection device of this invention employed in connection with a hollow door.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The door lock protection device is generally indicated at **10** in FIGS. 1 through 4. It comprises an escutcheon **12** and a tubular securement cylinder **14**. As is best seen in FIGS. 2 and 4, the escutcheon **12** has an outer surface **16** which is seen from the outside of the door and, thus, should be of suitable material or pattern to provide a suitable ornamental appearance. In the present case, turned metal is considered a desirable surface character, but sandcast metal or other appropriately configured or colored surface is suitable. However, the outer surface **16** is preferably a surface of revolution having a minimum amount of physical character to minimize the opportunity for the grasp of tools onto the exterior thereof. In the present case, a right cylindrical, truncated, conical outer surface **16** is illustrated, and is preferred.

Escutcheon **12** has an interior opening **18** therethrough. The interior opening is cylindrical and is on the same axis as the right cylindrical conical surface **16**. Recessed below the front face **20** is counterbore **22**. Counterbore **22** provides both a rear stop shoulder **24** and an outer guide bore **26** to receive the front ring **28** of lock cylinder **30**.

Tubular securement cylinder **14** is a cylindrical tube unitarily formed with escutcheon **12**, so that the device **10** is made out of a single piece of metal. The interior diameter of tubular securement cylinder **14** is colinear with interior opening **18**, which defines the opening through the entire device **10**. The outer surface **32** is a cylindrical surface having the same axis as the conical surface **16** and interior opening **18**. Crossbore **34** is a cylindrical opening transversely through securement cylinder **14**. The axis of crossbore **34** intersects with, and is at right angles with respect to, the common axis of conical surface **16**, interior opening **18** and outer surface **32**. Crossbore **34** need only extend through one of the sides of cylinder **14**, but, as shown, it preferably extends through both of the walls of the cylindrical tube.

Door **36** is suitably hinged to swing with respect to jamb **38**. Door **36** has a hole **40** therethrough, from the front to the back face of the door. Door lock protection device **10** fits into hole **40** so that the escutcheon **12** engages around the hole on the outer face of the door. Door **36** also has hole **42** therein which serves as a hole to receive bolt housing **44**. Hole **42** enters the door from its mortise edge and its axis intersects the axis of hole **40**, preferably at right angles. Thus, with the tubular securement cylinder of the door lock protective device **10** in the hole **40**, the insertion of bolt housing **44** into hole **42** permits the bolt housing to enter into cross bore **34**, and through at least one of the walls of the securement cylinder **14**. By this means, securement cylinder **14** is secured against withdrawal out of the front face of the door, so that the escutcheon **12** remains in place, centering and retaining lock

cylinder 30. Bolt housing 44 is secured with respect to the door by means of having its mortise plate let into the edge of the door with screws extending through the mortise plate into the door edge as is conventional practice. Bolt 46 extends out of the bolt housing, past the outer edge of the door 36 to operate with respect to bolt plate 48 recessed into jamb 38. Instead of having a bolt 46, means can be provided for permitting spring operation so that self-latching is accomplished, rather than dead bolting, as described.

FIGS. 2 and 3 show anchor plate 50 extending from bolt housing 44 to extend nearly all the way across the interior of securement cylinder 14. Latch bar 52 extends from bolt housing 44 above the anchor plate and is connected to be moved by rotation of the key in cylinder 30, in conventional manner.

Interior escutcheon plate 54 can be provided with a suitable handle for bolt operation, as is conventional practice, and has screws extending therethrough and into lock cylinder 30 to clamp escutcheon 12 against the front face of the door. The screws are illustrated at 56 and 58. Since at least one of the screws, such as screw 58 in FIG. 3, passes through an opening in anchor plate 50, the bolt housing 44 cannot be withdrawn as long as the screws are in place. Furthermore, as long as the bolt housing is in place, door lock protective device 10 cannot be rotated or withdrawn. As illustrated, bolt housing 44 passes through only one wall of securement cylinder 14. However, other types of bolt housings are longer and would conventionally extend through both walls of the securement cylinder. For that reason, crossbore 34 extends through both walls of the securement cylinder. The crossbore 34 is sufficiently small with respect to the outer diameter of the securement cylinder, together with the material of device 10, that sufficient strength is provided to eliminate any chance of breakage of the device 10 by the application of wrenching loads from the outer surface 16.

Referring to FIGS. 5 and 6, the device 10 is also shown therein. However, the counterbore 22, which is the same counterbore shown in FIG. 2, is of such size as to not accurately accept front ring 60 of lock cylinder 62. For this reason, spacer ring 64 is employed. In view of the fact that lock cylinder 62 has a shallower front ring 60, the spacer ring 64 takes up the excess of depth of counterbore 22.

A similar situation occurs in the structure of FIG. 6, wherein the counterbore 22 is both too large in diameter and too deep in depth for the front ring 66 of lock cylinder 68. For this reason, spacer ring 70 is of suitable external dimensions to fit into counterbore 22, while it has its own counterbore 72 of suitable dimensions to properly accept front ring 66. By this means, several dimensions and configurations of lock cylinders can be accommodated in a single economical size of device 10 without detracting from the external attractiveness.

FIG. 7 illustrates door lock protective device 10 installed in a hollow door such as a steel door 74. One of the problems with steel doors is that they have less compressive strength from face to face than do solid wood doors. While a steel door 74 is cited as presenting the problem, the same solution as described for steel door 74 can be employed on other doors. Securement cylinder 14 is dimensioned to be of such length that, when escutcheon 12 of door lock protection device 10 is against the outer surface of door 74, the securement cylinder 14 terminates flush with the inner surface of the door, as shown in FIG. 7. The lock in door lock protective device 10 in FIG. 7 is held in place by the conventional screws extending through from the room side of escutcheon 76. Escutcheon 76 has a planar interior surface so that the end of securement cylinder 14 abuts thereagainst to resist excessive compressive stresses upon door 74. When the lock-mounting screws are tightened up, securement cylinder 14 engages the interior, door-side surface of escutcheon 76 to prevent further compression of the door. By this means, the commonly occurring distortion of the door is prevented.

The material of the device 10 is preferably metallic. In view of the fact that little available area is accessible to grasp from the outside of the door when the device is in position, the material need not be of great strength. For example, wrought or cast aluminum is satisfactory, especially when the wall thickness of the securement cylinder 14 is determined with the strength of aluminum in mind. If a smaller wall thickness or a considerably greater strength is desired, steel or other high strength materials can be employed. However, it is readily seen that the material employed should not be brittle. Otherwise, a part of the escutcheon could be broken out by a sharp blow, again rendering the latch mechanism accessible from the exterior. Thus, aluminum is the preferred material because of its appearance, malleability and satisfactory strength.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects, and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of this invention.

What is claimed is:

1. A door lock protection device comprising:
an escutcheon and a securement cylinder integrally formed therewith of nonmalleable metal;
an interior opening extending through said escutcheon and said securement cylinder said opening being dimensioned to receive the body of a lock cylinder, said opening having an axis which is substantially the axis of revolution of said escutcheon and said securement cylinder, said opening being cylindrical so that said escutcheon and said securement cylinder are tubular having the interior and outer surfaces thereof of revolution, substantially about said axis;
said securement cylinder having a first outer surface and said escutcheon having a second outer surface of greater dimension than said first outer surface so that the escutcheon extends radially beyond said securement cylinder to define a shoulder which is engageable upon the face of a door, said outer surface of said escutcheon being substantially the surface of a truncated right circular cone having its larger diameter toward said securement cylinder, a counterbore formed in said escutcheon with respect to the interior cylindrical opening therethrough, said counterbore defining a rear stop shoulder and a guide bore, said rear stop shoulder and said guide bore being dimensioned for receiving and radially positioning the front flange on a lock cylinder with respect to said escutcheon; and
a crossbore through at least one wall of said securement cylinder, said crossbore having an axis substantially intersecting with and at right angles to said axis of said interior opening, said crossbore being dimensioned to receive a portion of a bolt mechanism so that said door lock protection device is restrained from rotation or removal from the door.

2. The door lock protection device of claim 1 wherein:
a spacer ring is positioned in said counterbore in said escutcheon, said spacer ring being dimensioned to engage the front flange of a lock cylinder to retain the lock cylinder with respect to said door lock protection device and maintain the front face of the lock cylinder substantially in line with the front face of said protection device.

3. The door lock protection device of claim 1 wherein:
said securement cylinder has a length from its end to said escutcheon shoulder substantially equal to the thickness of a door, and an interior escutcheon is engaged against said securement cylinder to prevent overcompression of a door.

4. In combination:
the door lock protection device of claim 1;
a door;
said door having a first hole therethrough, said door lock protective device being engaged substantially through said first hole through said door;
a second hole in said door from the edge thereof and intersecting said first hole thereof;

a bolt housing engaged in said second hole, said bolt housing extending into said crossbore to lock said door lock protection device with respect to said door until said bolt housing is removed, so that said escutcheon cannot be wrenched away for access to said bolt housing from the front face of said door.

* * * * *