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E. L. SCHLAGE
FACEPLATE FOR DOOR LOCKS

2,655,030

Filed April 17, 1950

2 Sheets-Sheet 1

FIG. 1.

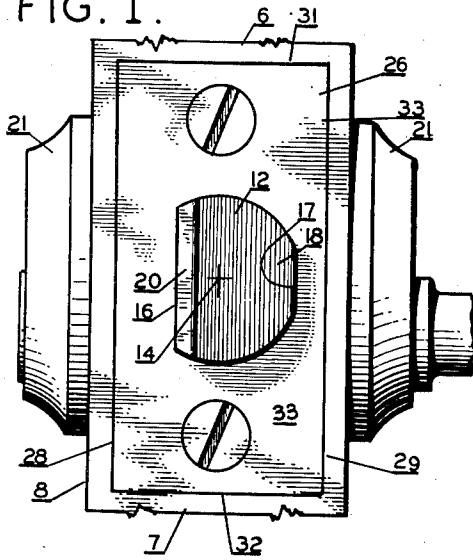


FIG. 2.

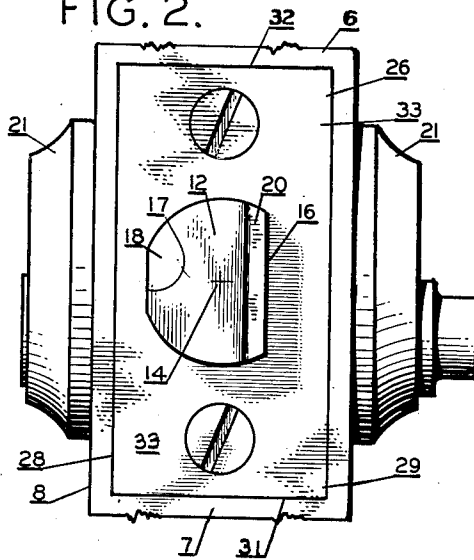


FIG. 3.

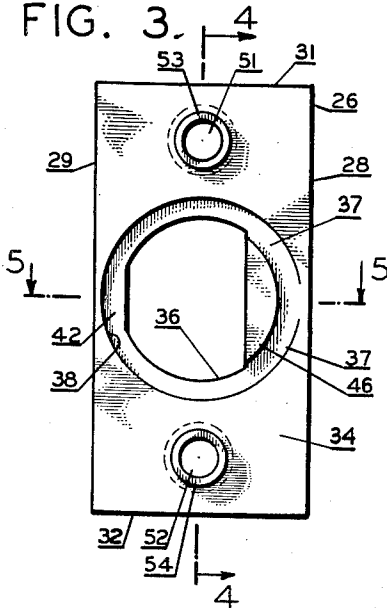


FIG. 4.

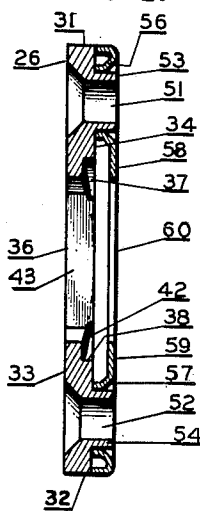
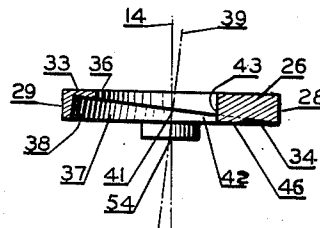


FIG. 5.



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FIG. 6.

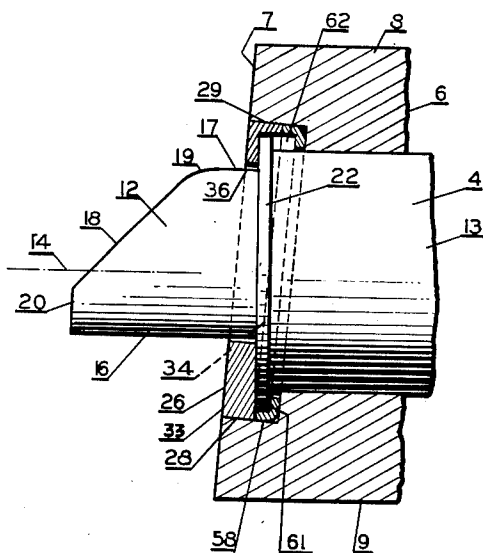


FIG. 7.

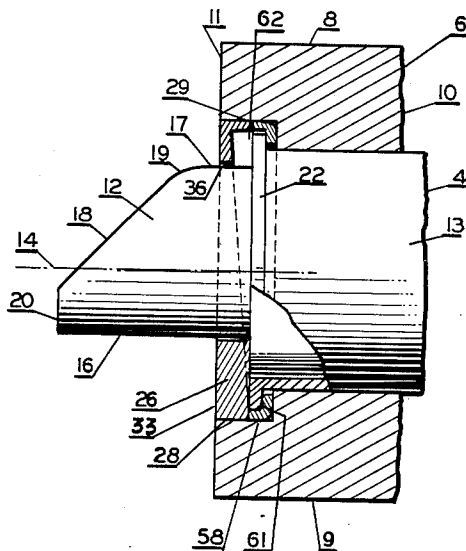


FIG. 8.

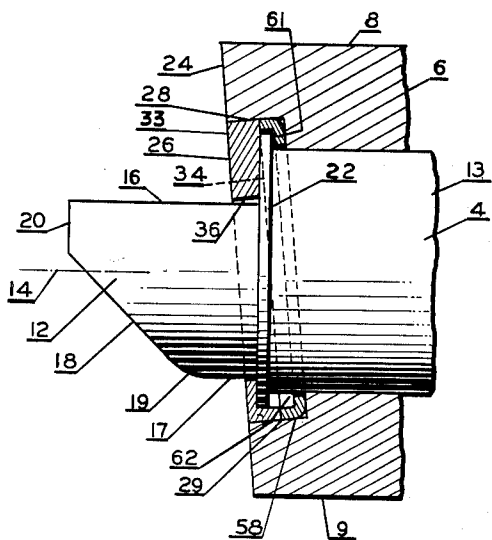
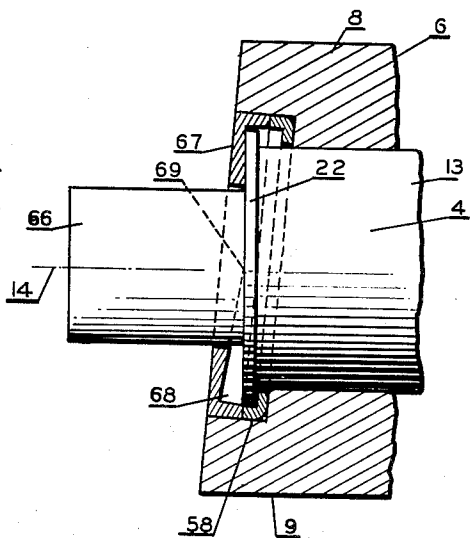


FIG. 9.



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FACEPLATE FOR DOOR LOCKS

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9 Claims. (Cl. 70-450)

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The invention relates to door locks for installation in doors having either a right hand bevel, a left hand bevel or no bevel at all, and is concerned particularly with locks of the general type illustrated in the patent to Walter R. Schlage, Number 2,355,682, issued August 15, 1944.

Door locks are installed with variations depending upon the direction of swing of the door and upon the thickness of the door. Very thin doors, regardless of their direction of swing, are usually not bevelled because the difference between the arcuate motion of the door in swinging and the planar faces of the door and of the door jamb is not sufficient to cause interference. A relatively thick door is bevelled on its edge face usually, but not always, a standard amount so that the edge plane is more nearly a chord of the arc of door swing about the hinge axis. If the door is swung in one direction, its bevel is one way whereas if it is swung in the opposite direction the bevel is opposite. Heretofore, different door locks have been specially supplied with right hand bevel or left hand bevel or no bevel at all. Alternatively, a series of different lock parts, one for each type of installation, are available as a group for selection of a proper lock part to furnish the proper resulting face plate inclination for a previously designated installation.

It is an object of the invention to provide a single door lock adaptable for use with doors having a right hand bevel, having a left hand bevel, or having no bevel.

Another object of the invention is to provide a face plate for use with various inclinations or degrees of door bevel.

A still further object of the invention is to provide a normal appearing face plate useful with standard door locks and capable of being oriented to fit the door in which the lock is installed.

Another object of the invention is to provide a door lock that needs no variation to fit various doors, the different orientations being made solely by the face plate.

A still further object of the invention is in general to improve door lock face plates.

Other objects of the invention, together with the foregoing, are attained in the embodiment described in the accompanying description and illustrated in the accompanying drawings in which:

Figure 1 is a front elevation of the face plate installed in a door having a bevel in one direction, portions of the door being broken away.

Figure 2 is a view similar to Figure 1 but show-

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ing a face plate installation in a door having the bevel in the opposite direction.

Figure 3 is a view of the reverse side of the face plate.

Figure 4 is a cross section through the face plate partly assembled with a backing plate, the plane of section being indicated by the line 4-4 of Figure 3.

Figure 5 is a cross section through the face plate, the plane of section being indicated by the line 5-5 of Figure 3.

Figure 6 is a cross section on a horizontal plane of a portion of a bevel door, lock and face plate assembly, corresponding to Figure 2.

Figure 7 is a cross section on a horizontal plane of a portion of an unbevelled door, lock and face plate assembly, corresponding to Figure 2.

Figure 8 is a cross section on a horizontal plane of a portion of a door bevelled oppositely to the door of Figure 6, and the lock and face plate assembled with it, and corresponding to Figure 1.

Figure 9 is a cross section on a horizontal plane of a portion of a door, a modified lock having a lock bolt, and a modified form of face plate assembled with it.

In the usual instance, a lock 4 (Figure 6) is installed in a door 6 having a bevelled face 7 or edge. While the edge is planar, its plane is not at right angles to the general side planes 8 and 9 of the door but is inclined thereto. If a door 10 (Figure 7) is very thin, its face 11 is usually made at right angles to the side planes 8 and 9. The lock 4 is preferably of the type shown in the mentioned patent and includes a latch bolt 12 and a bolt housing 13. The bolt, in part, and the housing are approximately symmetrical about an axis 14 generally parallel to the planes 8 and 9.

The latch bolt 12 is customarily formed from an originally circular cylindrical metallic member cut to provide a generally flat surface 16 (see Figure 2) opposite a flat surface 17 and is further formed near one end with an inclined strike surface 18 merging with the surface 17 through an arcuate section 19 and connected with the surface 16 by a transverse planar portion 20. The direction or sense of the strike surface 18 is comparable to that of the bevel 7 although the degree of inclination is usually much different. The latch bolt 12 is movable by camming of the strike surface 18 in the general direction of the axis 14 into the housing 13.

The housing is conveniently a circular cylindrical hollow body encompassing the latch bolt 12 and is connected within the door 6 to the customary actuating mechanism and trim 21. The

housing 13 at its forward end is enlarged to provide a generally circular, peripheral flange 22 outstanding from the main body of the housing, and disposed approximately perpendicular to the axis 14. Upon installation, if necessary, the latch bolt 12 is revolved about the axis 14 through a half turn (Figure 8). The strike surface 18 on the latch bolt is thus set in the same general direction as the bevel on the door so that the same lock can be installed either in a right hand or a left hand door. As shown by Figures 6 and 8, when the strike surface 18 is reversed, it corresponds in direction although not angularity with opposite bevels 7 and 24 of the door 6.

In accordance with the invention, a single face plate 26 is provided for use with either of the bevels 7 or 24 or use with an unbevelled face 11. The face plate 26 is preferably fabricated of a single sheet or body, usually metal, of generally rectangular outline being bounded by a pair of parallel side edges 28 and 29 and a pair of parallel end edges 31 and 32. Throughout most of its extent, the plate 26 on its obverse face 33 is generally planar and on its reverse face 34 is generally planar although certain areas are otherwise contoured.

Adjacent its center, the face plate 26 is pierced to provide an aperture 36 having an outline substantially the same as but slightly larger than the outline in cross section of the latch bolt 12 so that the face plate forms an approximate guide and shield for the latch bolt. The face plate aperture 36 being non-circular, likewise is, in effect, keyed to the latch bolt so that upon installation and prior to permanent fastening a rotation of the plate 26 produces a comparable rotation of the latch bolt.

In order to accommodate the flange 22 of the housing 13, the reverse face 34 of the plate 26 is provided with a recess 37 conveniently made by a machining operation such as end milling or boring. The recess 37 is bounded for the most part by a wall 38 that is circular cylindrical about an axis 39 inclined to or diverging with respect to and intersecting the axis 14. The point 41 of intersection of the axes 14 and 39 is approximately between the planes of the faces 33 and 34. The recess 37 is likewise bounded by a flat bottom wall 42, the plane of which is perpendicular to the axis 39. The location of the bottom wall 42 is such that preferably it intersects the plane 34 at about the side edge 28 of the face plate. The shape of the aperture 36 is followed by elements of a cylinder. The elements are preferably parallel to the axis 14 to define the walls of a passageway 43. The cylindrical elements can alternatively be parallel to the axis 39 or preferably to an axis midway between the axes 14 and 39.

Since the passageway 43 interrupts a great part of the bottom 42 of the recess, it is not necessary to machine the entire area of the bottom wall. An annular cut of sufficient radial extent to run into or intersect the passageway 43 is adequate. Along one side, the passageway 43 does not intersect the annular cut but leaves an upstanding land 46 of approximately crescent contour and co-planar with the reverse face 34. Since the latch bolt 12 contacts the face plate as a stop for its outward motion, the land 46 is effective for this purpose in any position, while the walls of the passageway 43 serve as bearings for the latch bolt.

In addition to the recess 37, the face plate is preferably contoured to provide screw passages

51 and 52 surrounded by bosses 53 and 54. These are designed to pass into suitable rimmed apertures 56 and 57 in an inner backing plate 58 having an inturned flange 59 surrounding an aperture 60 and designed to fit behind the flange 22 on the housing 13.

In assembling the lock, the backing plate 58 is disposed over and around the housing 13 with a loose fit and the face plate 26 is passed over the latch bolt 12 and into abutment with the backing plate 58. The bosses 53 and 54 are passed through the apertures 56 and 57 and are spun over or riveted to secure the inner plate and the face plate together securely.

The depth of the recess 37 with respect to the overlying flange 59 and to the intermediate flange 22 is such that at one point, near the edge 28, a relatively tight fit is provided, there being only sufficient clearance 61 to permit a pivotal swinging motion of the face plate and backing plate relative to the housing 13. Near the edge 29 of the flange, the clearance space 62 afforded by the deeper portion of the recess 37 is sufficient so that the face plate 26 can be cocked into an extreme angular position co-planar with the bevels 7 and 24 as shown in Figures 6 and 8 or can be set in a transverse position with its face coincident with the rectangular face 11 when there is no bevel, as in Figure 7. In any case, the flange 22 of the lock housing 13 is located accurately with respect to the surface 33 of the face plate, being constrained against axial displacement in all positions. The clearance between the various parts is such that the arcuate tilting and rotation of the face plate (and of the backing plate 58) with respect to the housing 13 and to the latch bolt 12 can readily be accomplished.

Whether the installation is to be made in a door having a bevel 7, as in Figure 6, a bevel 24, as in Figure 8, or no bevel 11, as in Figure 7, just prior to installation of the lock 4 the face plate 26 and the backing plate 58 are, if necessary, both rotated about the axis 14 and carry the latch bolt 12 with them into proper position. The inclination of the face plate 26 is then co-planar with the bevel when the face plate fastenings are installed.

In the event the lock 4 is provided with a lock bolt 66 (Figure 9) instead of a latch bolt 12, or in any case, if the bolt is not rotatable, the face plate 67 is provided with a recess 69 counter-bored or recessed in different directions to leave a central rocking ridge 69. The face plate can be tilted transversely to either extreme position, upon the ridge 69 as a fulcrum, to accommodate either direction of bevel, or can be left in a central flat position if there is no bevel.

What is claimed is:

1. A face plate for a door lock having a bolt housing with a peripheral flange and having a backing plate adapted to abut one side of said flange comprising an apertured plate having an outer face in a predetermined plane and having an inner face formed with a recess having a wall adapted at least partially to encompass said flange and having a bottom in a plane inclined to said predetermined plane.

2. A face plate for a door lock comprising an apertured plate having a planar obverse face and a substantially planar reverse face with a recess bounded by a bottom inclined to said reverse face.

3. A face plate for a door lock comprising an apertured sheet having a recess encompassing

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the aperture, the bottom of the recess being inclined to the sheet.

4. A face plate for a door lock comprising a sheet having an aperture therein and having an annular recess encompassing said aperture, the bottom of said recess being inclined to the sheet. 5

5. A face plate for a door lock having a bolt housing with a peripheral flange and having a backing plate adapted to surround said bolt housing and abut one side of said flange comprising an apertured plate secured to said backing plate, there being a recess with an inclined bottom in said apertured plate to provide clearance space between said apertured plate and most of said flange. 10

6. A face plate for a door lock having a bolt housing with a peripheral flange of predetermined thickness comprising an apertured plate having a recess therein one part of which is substantially deep enough to receive said flange and another part is of lesser depth. 20

7. A face plate for a door lock comprising a planar plate having a bolt aperture therein and

having a recess of varying depth encompassing said bolt aperture.

8. A face plate for a door lock comprising a planar plate having an annular recess of varying depth therein and having a bolt aperture intersecting part but not all of said recess.

9. A face plate for a door lock having a bolt housing with a peripheral flange comprising an apertured plate having a portion adapted to abut the front of said flange, and a fastening secured to said plate having a portion adapted to extend behind said flange, the distance between said portions being different at different parts of said flange for constraining said bolt housing to rocking movement with respect to said flange. 15

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