June 25, 1968 F. J. RUSSELL ET AL 3,389,587

LOCK CASE RETAINER

Filed July 19, 1966

FIG. 1.

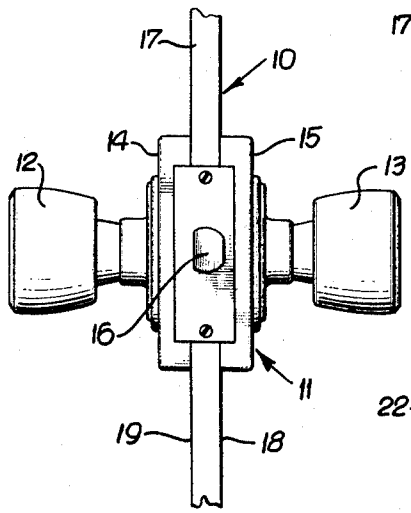


FIG. 2.

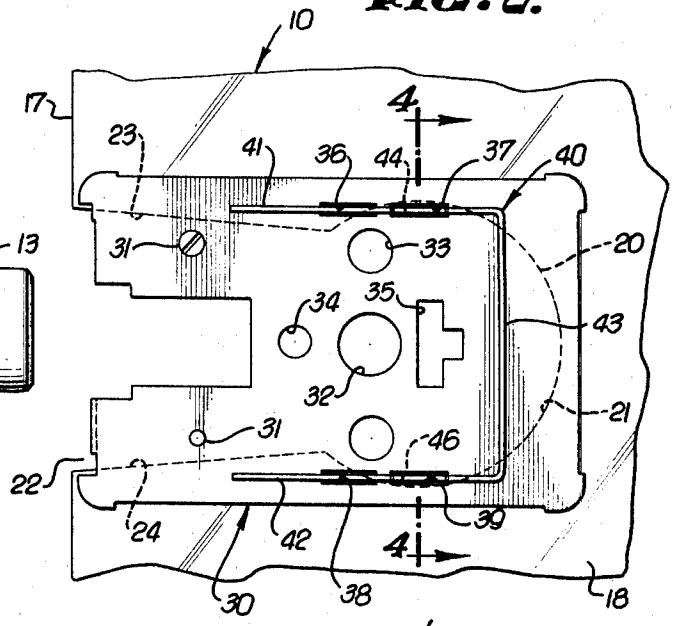


FIG. 3.

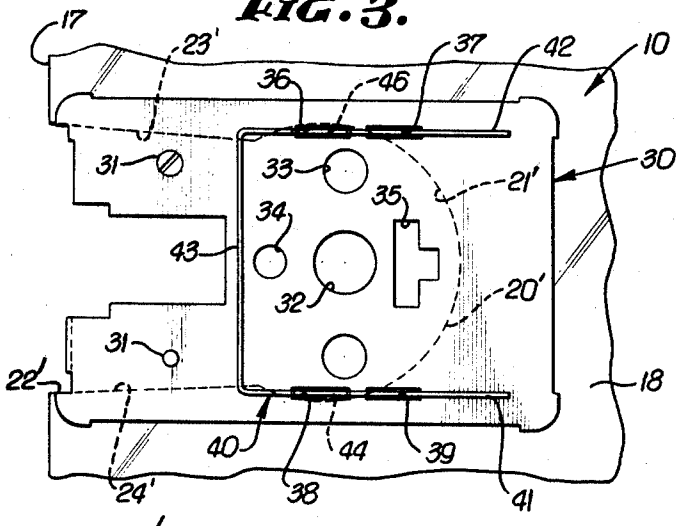


FIG. 4.

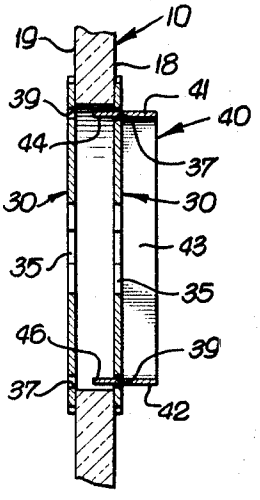
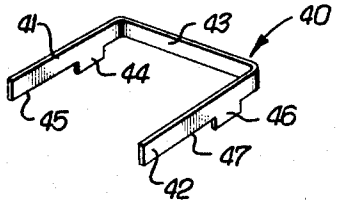


FIG. 5.



FRED J. RUSSELL
RICHARD L. ARMSTRONG
HAROLD W. FALK
INVENTORS.

BY Beehler & Arant

ATTORNEYS.

United States Patent Office 3,389,587 Patented June 25, 1968

3,389,587

LOCK CASE RETAINER

Fred J. Russell, 8635 Otis St., South Gate 90280; Richard L. Armstrong, Santa Fe Springs; and Harold W. Falk, Inglewood, Calif.; said Armstrong and said Falk, assignors to said Fred J. Russell

Filed July 19, 1966, Ser. No. 566,380
5 Claims. (Cl. 70—451)

The invention relates generally to locks for thin doors. In order that a lock of normal thickness can be accommodated, a mounting case must be installed in the door. A thin door will not enclose the lock's latch member, which extends inwardly from the free edge of the door, because the door is actually thinner than the diameter of the latch member. To receive the lock, there is a cutout in a thin door, which is continuous from the free edge of the door. The problem is to provide a mounting case to enclose the latch member and to provide a retainer means for retaining the mounting case in the cutout, so that the mounting case cannot be removed edgewise from the door.

Such a cutout in a thin door generally is larger at a location inward from the free edge of the door. The larger portion of the opening intersects the smaller portion which extends inwardly from the free edge of the door, and a shoulder is thus created at the intersection point. Due to the variation in location of this intersection point, any means which connects to this shoulder and to the mounting case, to prevent the edgewise removal of the latch member from the free edge of the door, must be variable.

It therefore is among the objects of the invention to provide a retainer which prevents edgewise removal of a lock mounting case from the free edge of the door.

Another object of the invention is to provide a retainer which prevents edgewise removal of a lock mounting case from the free edge of the door, the form of said retainer being such as to be positioned at a variable location in relation to the mounting case, so as to develop more than one retainer location to coincide with more than one cutout configuration.

Another object of the invention is to provide a new and improved mounting plate for thin doors which is simple, inexpensive and easy to attach, and which at the same time can be quickly and easily adjusted in the field in such fashion as to securely anchor the mounting plate to a door, so that it cannot be removed edgewise from the door.

Still another object of the invention is to provide a new and improved mounting plate for thin doors which can be adjusted to door holes located at different distances from the edge of the door by merely changing the position of a typical spacer from one orientation to another, while at the same time making it unnecessary to change any other portions of the mounting plate or accompanying hardware.

Still another object of the invention is to provide a new and improved mounting plate for thin doors which makes use of a spacer of simple, inexpensive construction. The spacer is so constructed as to be quite versatile in the sundry positions in which it may be applied to the mounting plate, so that the spacer serves simultaneously to anchor the mounting plate in an appropriate position in a precut mounting hole in the door by use of a single uniform mounting plate which merely provides alternate sets of openings at different locations to accommodate the spacer in any one of its positions, to accommodate a variety of locations of the precut mounting hole.

With these and other objects in view, the invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the appended claims and illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a side elevational view of a fragment of door showing a typical door lock in place.

FIGURE 2 is a side view of the mounting plate assembly, with other portions of the door lock removed to reveal the construction of the mounting plate assembly.

FIGURE 3 is a side elevational view similar to FIGURE 2, but showing the mounting plate adjusted to fit a mounting hole made at a location different from that of FIGURE 2.

FIGURE 4 is a longitudinal sectional view taken on the line 4—4 of FIGURE 2.

FIGURE 5 is a top perspective view of one form of spacer.

In an embodiment of the invention chosen for the purpose of illustration the door is illustrated as a glass door **10**, but it will be understood that a glass door has been selected only by way of example in that the invention applies equally well to other types of thin doors, such as steel, laminated wood, or appropriate plastic. Mounted on the door **10** is a typical door lock indicated generally by the reference character **11** and which includes outside and inside handholds **12** and **13**, outside and inside escutcheons **14** and **15** respectively, and a reciprocating latch or latch bolt **16**. The door lock **11** is mounted adjacent a free edge **17** of the door **10**, the inside face of the door **10** accordingly being identified by the reference character **18** and the outside face by the reference character **19**.

In FIGURE 2, the door **10** is provided with a mounting hole having a circularly arcuate opening **20** formed by a side wall **21**. The circularly arcuate opening **20** is connected by a somewhat wedge-shaped passage **22** formed by respective upper and lower walls **23** and **24**, the wedge-shaped passage **22**, thus serving to interconnect the circularly arcuate opening **20** with the free edge **17**. The opening **20** is therefore larger than the passage **22**.

A mounting plate **30**, generally rectangular in form, has a length and width sufficient to entirely cover both the circularly arcuate opening **20** and the wedge-shaped passage **22**. Although only one mounting plate **30** is shown, it is designed and adapted to be connected to a similar mounting plate on the opposite side of the door by means of mounting screws **31**. By way of example, the mounting plate **30** may be provided with a central recess **32** to clear a conventional spindle (not shown) interconnecting the outside and inside handholds **12** and **13** respectively. Other recesses **33**, **34**, **35**, for example, may accommodate other parts of the lock mechanism (not shown), but not material to the present invention. Of particular significance is the provision of a set of upper apertures consisting of the apertures **36** and **37** and a set of lower apertures consisting of the apertures **38** and **39**, the apertures **36** and **38** respectively of the upper and lower sets being more nearly adjacent the free edge **17** of the door **10** than the apertures **37** and **39**.

In the chosen embodiment, a spacer, indicated generally by the reference character **40** and shown by itself in FIGURE 5, is substantially U-shaped and formed of legs **41** and **42** joined at one end of each by a crossbar **43**. A tab-like projection **44** extends from one edge **45** of the leg **41**, and a tab-like projection **46** extends from a comparable edge **47** of the leg **42**. The projection **44** is adapted to fit in one or another of the apertures **37** and **38**, whereas the projection **46** is adapted to fit in one or another of the apertures **36** and **39**. With the circularly arcuate opening **20** of the mounting hole, being located at the selected distance shown in FIGURE 2 from the free edge **17** of the door **10**, the apertures **37** and **39** clear the side wall **21** of the circularly arcuate opening **20**, whereas the apertures

36 and 38 overlie a portion of the inside face 18 of the door 10. When this condition exists, the projections 44 and 46 are extended through the respective apertures 37 and 39 to locations where they engage the surface of the side wall 21. In this or any other of its positions, the crossbar 43 and legs 41 and 42 of the spacer 40 must be located within the inside escutcheon 15. By bearing against the side wall 21, the projections 44 and 46 serve to anchor the mounting plate 30 in its proper position and to prevent it from being removed edgewise through the passage 22.

On other occasions, where the circularly arcuate opening 20' forming part of the mounting opening as shown in FIGURE 3, is at a different distance inwardly from the free edge 17 of the door 10, and the wedge-shaped passage 22' formed by the respective upper and lower walls 23', 24' is relatively shorter than the recess 22, the apertures 37 and 39 cannot be used. The apertures 36 and 38, however, do open clear into the circularly arcuate opening 20', and hence these last-identified apertures 36 and 38 can be used to anchor the mounting plate 30 in its proper position. This is accomplished merely by reversing the orientation of the spacer 40 by 180 degrees to the position shown in FIGURE 3. When this is done, the same projections 44 and 46 are projected respectively through the apertures 38 and 36 to positions where they lie against the side wall 21' of the circularly arcuate opening 20' when that circularly arcuate opening 20' has a position more closely approaching the free edge 17 as shown in FIGURE 3. Accordingly, no part of the mounting plate assembly, either the mounting plate 30 itself or the spacer 40, need be changed, the only change necessary being to position the spacer 40 in a different orientation. In the new orientation, the spacer 40 and legs 41 and 42 will lie within the inside escutcheon 1, which can be fitted to the door face 18 in the usual and customary fashion.

In all instances, the fit between the inside escutcheon 15 and the inside face of door 18 prevents the projections 44, 46 from losing contact with side wall 21 or 21'.

It further should be understood that the result would be the same, in the embodiment shown, were the spacer 40 to have only one or the other of the projections 44, 46.

While the invention has herein been shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims, so as to embrace any and all equivalent devices.

Having described the invention, what is claimed as new in support of Letters Patent is:

1. A mounting assembly for mounting a lock structure on a relatively thin door, wherein the door has a mounting hole therethrough at a selected distance from the free edge of the door, a passage extending from the free edge of the door to a point which intersects said mounting hole in such manner as to leave at least one shoulder in said mounting hole adjacent such intersection, said assembly comprising a mounting plate adapted to lie against a side face of the door at a location overlying at least part of the side walls of said mounting hole and said passage, said mounting plate having an aperture therein positioned to overlie said mounting hole adjacent said shoulder, a spacer adapted to overlie said mounting plate said spacer having projection means thereon, said projection means extending into said aperture and engaging said shoulder of said mounting hole when the spacer is in position, thereby to secure the mounting assembly in a selected location in relation to the free edge of the door.

2. A mounting assembly according to claim 1, wherein the mounting hole is round and has arcuate upper and lower side walls.

3. A mounting assembly for mounting a lock structure on a relatively thin door, wherein the door has a mounting hole therethrough positionable at one of a plurality of different distances from the free edge of the door, a passage extending from the free edge of the door to a point which intersects said mounting hole in such a manner as to leave at least one shoulder in said mounting hole adjacent such intersection, said assembly comprising a mounting plate adapted to lie against a side face of the door at a location overlying at least part of the upper and lower side walls of said mounting hole and said passage, said mounting plate having a number of apertures therethrough wherein at least one aperture is positioned to overlie said mounting hole adjacent said shoulder when said mounting hole is positioned in anyone of said plurality of different distances from the free edge of the door, one aperture being relatively nearer said free edge, than another, and a spacer adapted to overlie said mounting plate, said spacer having projection means thereon, said projecting means being offset relative to the vertical centerline of said spacer, said projection means extending through said at least one aperture and engaging said shoulder of the mounting hole when the spacer is in position, thereby to secure the mounting plate in a selected location in relation to the free edge of the door

4. A mounting assembly according to claim 3, wherein there are a number of sets of apertures, each set consisting of an opening adjacent both an upper and lower portion of the side wall of the mounting hole, and wherein certain apertures of the set are nearer the free edge than other apertures of the set, and said spacer has projection means for engagement with both upper and lower opening of a set of apertures.

5. A mounting assembly according to laim 3, wherein the spacer is substantially U-shaped and the projection means extend from the legs of the U, said projecting means being positioned on one side of the midpoints of said legs.

References Cited

UNITED STATES PATENTS

2,538,688	1/1951	Heyer	70—449 X
2,700,887	2/1955	Oxhandler et al.	70—451
3,241,874	3/1966	Russell et al.	70—451 X

MARVIN A. CHAMPION, *Primary Examiner.*

P. TEITELBAUM, *Assistant Examiner.*