Dec. 3, 1968 F. J. RUSSELL 3,414,307

DEADLOCKING LATCH CONSTRUCTION

Filed March 13, 1967

Fig. 1

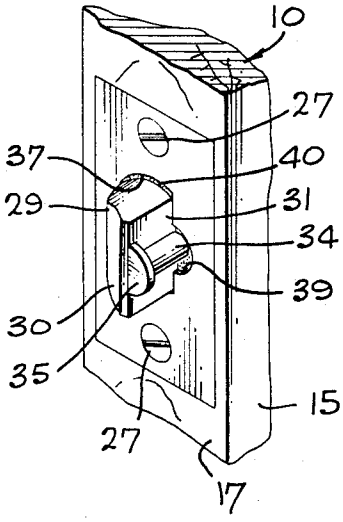


Fig. 2

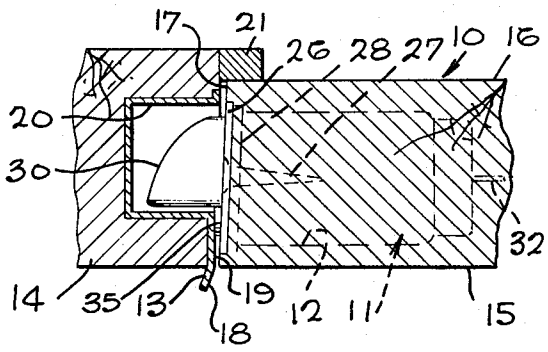
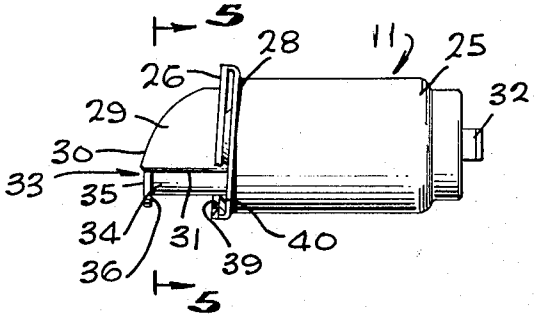


Fig. 3



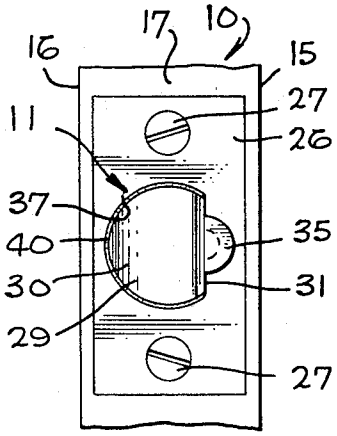


Fig. 4

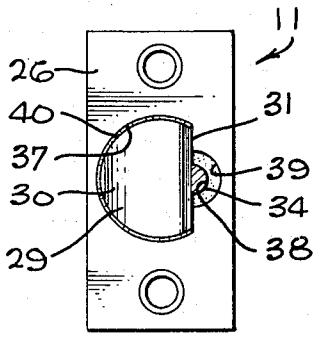


Fig. 5

INVENTOR.
FRED J. RUSSELL

BY

Beehler & Arant
ATTORNEYS

United States Patent Office

3,414,307
Patented Dec. 3, 1968

3,414,307

DEADLOCKING LATCH CONSTRUCTION

Fred J. Russell, 8635 Otis St., South Gate, Calif. 90281

Filed Mar. 13, 1967, Ser. No. 622,628
4 Claims. (Cl. 292—2)

ABSTRACT OF THE DISCLOSURE

This invention relates to the structure of a deadlocking bar and face plate. The deadlocking bar has an end portion of enlarged diameter adapted to be received in a complementary recess in a faceplate when the door upon which it is mounted is in the closed position.

The invention has reference to door locks, but more particularly that part of a door lock commonly referred to as a deadlocking latch, the purpose of which is to provide a latch bolt which cannot be pried back when the door is in closed position. Only the deadlocking latch construction is involved in this patent application. The internal mechanism, which determines what is accomplished by the deadlocking latch, is a conventional and well known construction.

As shown in FIGURE 1, when the door is opened, both the large latch bolt and the relatively smaller deadlocking bar are in extended positions. When the door is swung to a closed position, the latch bolt strikes against the curved lip of a strike plate in the door frame and is cammed temporarily to a retracted position, carrying the deadlocking bar with it. After the latch bolt coincides with an opening in the strike plate, the latch bolt then reciprocates to extended position to hold the door in closed position. The deadlocking bar, however, is so positioned that it overlies a flat portion of the strike plate and is held by the strike plate in retracted position. By appropriate mechanism, forming no part of the present invention, the latch bolt is blocked against pryback when the deadlocking bar is in retracted position, and said latch bolt thus cannot be priced back by unauthorized means to a release position in order to open the door. The latch bolt then can only be retracted in conventional fashion by either knob action or key action. Once retracted as described and the door is again swung to open position, both the latch bolt and the deadlocking bar are extended again, as shown in FIGURE 1, and the conventional mechanism is then such that the latch bolt can be readily depressed, as it has to be when the door is being closed.

The combination of latch bolt and deadlocking bar in general, wherein there is a deadlocking bar of relatively small size in sliding relationship to a conventional latch bolt, is a long established practice. For this combination to be certain of operating at all times, the hole in the strike plate must be small enough so the dead bolt can never enter the hole, but large enough so the latch bolt can easily enter the hole. What often happens is that doors become warped, or perhaps the frame may become warped, and what was originally a good working adjustment for the parts becomes a poor adjustment, due to such warpings. Because there frequently has to be a rather comfortable clearance between the inside edges of the hole in the strike plate and the latch bolt, warping sometimes shifts the parts out of adjustment far enough so that the deadlocking bar of conventional construction slips into the hole in the srike plate when the door is in closed position. Then said deadlocking bar no longer is effective in preventing the latch bolt from being pried back.

It is therefore among the objects of the invention to

provide a new and improved combination of deadlocking bar and latch bolt, wherein the contacting outer end of the deadlocking bar is made enough larger so that it will continue to overlap and engage the strike plate despite warping of the door, without there being need to make the dead bolt itself any larger.

Another object of the invention is to provide a new and improved deadlocking bar and latch bolt combination, wherein the deadlocking bar has a special, larger head. Said larger head serves to prevent the deadlocking bar from entering the hole in the strike plate, yet said larger head can be depressed to a position which is flush with the edge of the door when both the latch bolt and the deadlocking bar are depressed simultaneously.

With these and other objects in view, the invention consists of 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 these drawings:

FIGURE 1 is an end perspective view of a fragment of door, showing the combination lock device mounted therein in operative position;

FIGURE 2 is a transverse sectional view of the fragment of door and an adjacent fragment of door frame, showing the position of parts when the door is closed;

FIGURE 3 is a longitudinal view of the lock device itself;

FIGURE 4 is an end elevational view showing the lock device mounted in a door; and

FIGURE 5 is an end elevational view, partially in section, taken on the line 5—5 of FIGURE 3.

In an embodiment of the invention which has been chosen primarily for the purpose of illustration, there is shown a fragment of door **10** in which a latch bolt and deadlocking bar combination, indicated generally by the reference character **11**, has been mounted. A pocket **12** is provided in the door **10** for reception of the combination **11**. The door **10** and the combination **11** mounted thereon are shown in FIGURE 2 in cooperation with a strike plate **13** mounted in a door frame **14**.

The door **10** has opposite side faces **15** and **16** and a flat or moderately bevelled edge **17**. The strike plate **13** has a strike lip **18**, an exposed surface **19**, and a hole **20** therein. A stop **21** is provided on the frame **14**, against which the side face **16** is adapted to abut when the door **10** is in the closed position shown in FIGURE 2.

The latch bolt and deadlocking bar combination **11** reciprocates in a housing **25** to which is attached a faceplate **26** by means of screws **27** extending into appropriate flanges **28** at the adjacent end of the housing **25**. Within the housing **25** is a reciprocatably mounted latch bolt **29** which has a bevelled end **30**, a flat rear face **31**, and a tailpiece **32** protruding from the right-hand end of the housing **25**, as viewed in FIGURE 3.

Immediately adjacent the latch bolt **29** is a deadlocking bar **33** consisting of a shaft **34** and head **35**. As best seen in FIGURE 3, it will be noted that the shaft **34** is semicircular in cross-sectional shape, as is also the head **35**, but that the radius of the head **35** is substantially larger than the radius of the shaft **34**. This accordingly provides a substantial overhang **36**, as shown advantageously in FIGURE 3.

In the faceplate **26** is a relatively large hole **37** into which the latch bolt **29** extends. Immediately adjacent to said face plate **26** is a guide shim **40**. This guide shim **40** preferably is made of a low friction material, such as a synthetic plastic resin material. In said guide shim **40** is a smaller hole **38** through which the shaft **34** of the deadlocking bar **33** extends. The holes **37**, **38** are im-

mediately adjacent to and communicate with each other. These holes **37**, **38** extend through the flanges **28** and into the interior of the housing **25**.

Concentric with the small hole **38** is a recess **39** of relatively larger radius than the small hole **38**. The recess **39**, however, need extend only through the faceplate **26** and not through the flanges **28** located rearwardly. The recess **39** is made large enough to comfortably accommodate the head **35**. Moreover, when the thickness of the head **35** is made to a dimension corresponding to the thickness of the faceplate **26**, it will be clear that the head **35** will enter the recess **39**, and its outside end will be flush with the outer surface of the faceplate **26**, when the deadlocking bar **33** is fully depressed.

In operation, when the door **10** is in the open position shown in FIGURE 1, the mechanism of the latch bolt and deadlocking bar combination **11** is such that both of these bolts extend outwardly to fully extended positions. In these positions, the outer end of the outer face of the head **35** is substantially flush with the outermost portion of the bevelled end **30** of the latch bolt **29**. Should the latch bolt **29** be depressed, the mechanism is such that it carries the deadlocking bar **33** with it to depressed position. Such a movement occurs when the door **10** is swung to closed position with respect to the frame **14** and the stop **21**. As the bevelled end **30** hits the strike lip **18** of the strike plate **13**, the latch bolt **29** is depressed, carrying with it the deadlocking bar **33**. When the door finally hits the stop **21**, the latch bolt **29** will be in alignment with the hole **20** in the strike plate **13** and the mechanism of the dead bolt and deadlocking bar combination **11** is such that the latch bolt **29** will again be pushed out to extended position. In this relationship of parts, however, the head **35** of the deadlocking bar **33** will overlie the exposed surface **19** of the strike plate **13** and cannot extend. This is as it should be, because when the deadlocking bar **33** is prevented from being extended by appropriate conventional mechanism, it would not be possible to pry back the latch bolt **29**, as for example, by unauthorized means such as a shim, and thereby force the door **10** open by unauthorized means. The head **35**, moreover, is of diameter sufficiently large so that even if the door **10** were warped, or the door stop **21** were pushed out of place slightly, there would still be a portion of the head **35** overlying the exposed surface **19** of the strike plate **13** to keep the deadlocking bar **33** in depressed position. If it were not for the presence of the head **35**, the shaft **34** of the deadlocking bar, **33** as small as it is, might inadvertently enter the hole **20** of the strike plate **13**, along with the latch bolt **29**.

Although in FIGURE 2 there is shown a relatively free fit, so that there is some measurable distance between the exposed surface **19** of the strike plate **13** and the adjacent flat edge **17** of the door **10**, this space might be reduced to almost nothing, in which event the head **35** of the deadlocking bar **33** would recede into the recess **39** in the faceplate **26** and thereby avoid jamming.

When the latch bolt **29** is subsequently withdrawn by conventional means which act upon the tailpiece **32**, the door **10** becomes unlatched, the latch bolt **29** clearing the hole **20** in the strike plate **13**, at which time the door **10** can be swung open. Thereafter, the latch bolt **29** and the deadlocking bar **33** will reassume the positions shown in FIGURE 1.

While the invention has herein been shown and described in what is conceived to be a practical and satisfactorily operable embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which 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 door lock device for installation in a door at a free edge thereof, said device comprising a housing adapted to be set in said free edge, a latch bolt reciprocatably mounted in said housing adapted to be set in said free edge, a faceplate at an outside end of the housing free edge, a faceplate at an outside end of the housing adapted to be set in said free edge, a latch bolt reciprocatably mounted in said housing, a first hole in said faceplate for reception of said latch bolt in position wherein a head on said latch bolt extends therethrough, a deadlocking bar reciprocatably mounted in said housing adjacent said latch bolt, said deadlocking bar comprising a shaft and a head on the outside end of the shaft, a second hole in said faceplate adjacent said first hole reciprocatably receiving said deadlocking bar therein, said head having a cross-sectional shape with an area greater than the cross-sectional area of said shaft and extending transversely outwardly beyond the outside surface of said shaft, said faceplate having a recess extending around said second hole, said recess being complementary in shape and size to the cross-sectional shape and size of said head, whereby the outer face of the head is substantially flush with the outside surface of said faceplate when the deadlocking bar is in fully depressed position.

2. A door lock device according to claim **1**, wherein said deadlocking bar has a flat side in sliding engagement with an adjacent flat side of said latch bolt and wherein said head extends outwardly beyond the shaft of said deadlocking bar on the side opposite the side adjacent said latch bolt.

3. A door lock device according to claim **1**, wherein said shaft is semicircular in cross-sectional form and said head is also semicircular in cross-sectional form but of radius larger than the radius of said shaft.

4. A door lock device according to claim **1**, wherein the thickness of said head is not substantially greater than the thickness of said faceplate.

References Cited

UNITED STATES PATENTS

2,807,488 9/1957 Schlage ---------- 292—2

MARVIN A. CHAMPION, *Primary Examiner.*

J. R. MOSES, *Assistant Examiner.*