Sept. 5, 1944. W. R. SCHLAGE 2,357,552

LOCK STRUCTURE

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Fig. 4.

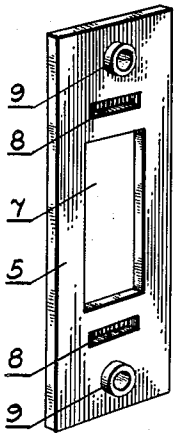


Fig. 5.

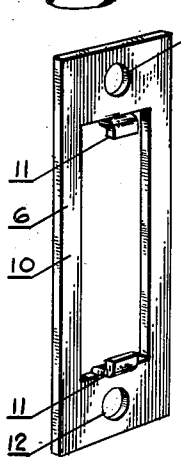


Fig. 3.

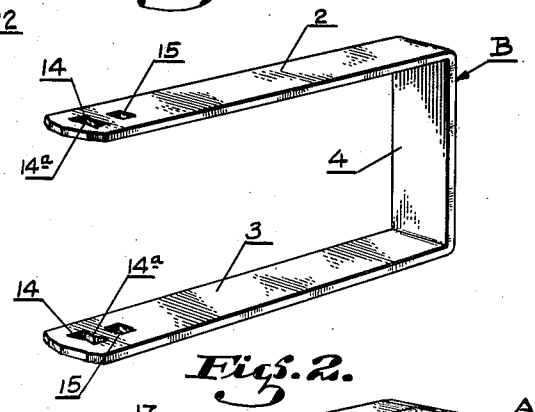


Fig. 2.

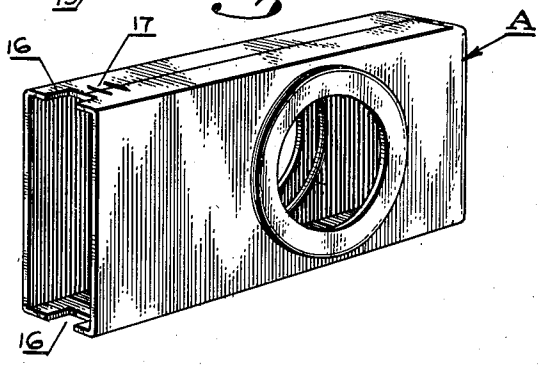


Fig. 1.

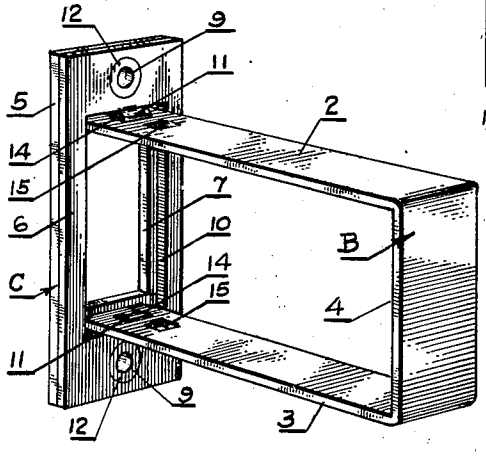


Fig. 6.

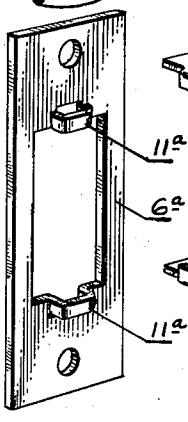


Fig. 7.

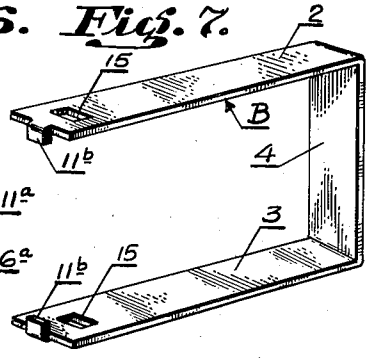


Fig. 8.

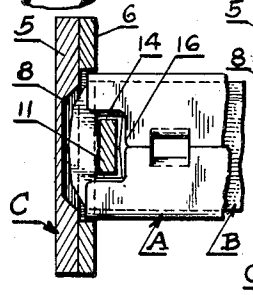
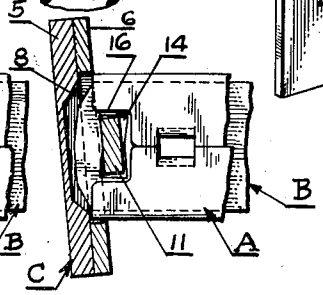


Fig. 9.



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Fig. 10.

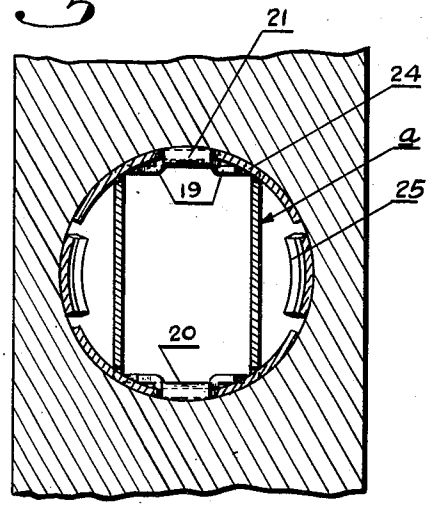


Fig. 11.

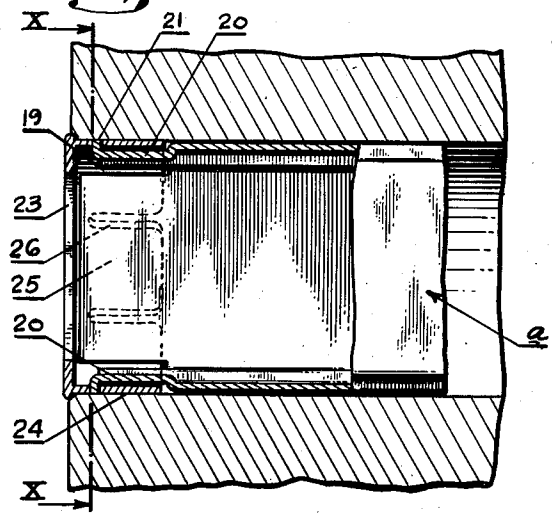


Fig. 12

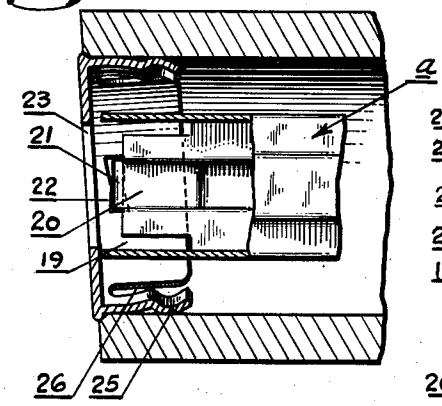


Fig. 13.

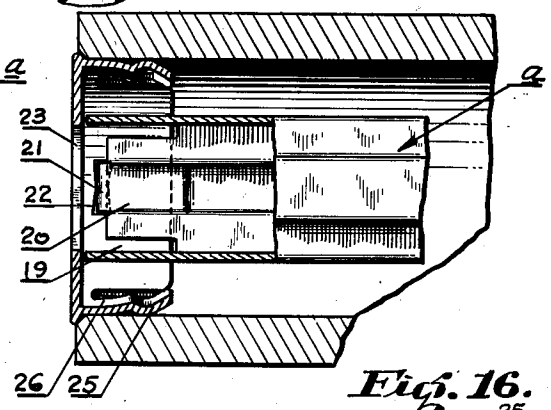


Fig. 14.

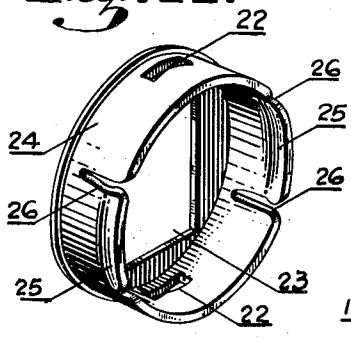


Fig. 15.

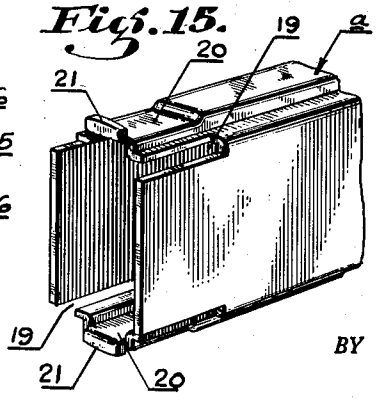
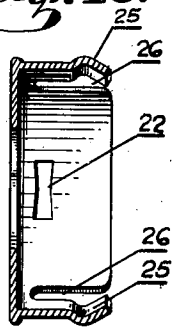


Fig. 16.



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Patented Sept. 5, 1944 2,357,552

UNITED STATES PATENT OFFICE

2,357,552

LOCK STRUCTURE

Walter R. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif., a corporation of California

Application July 15, 1941, Serial No. 402,450

7 Claims. (Cl. 292—337)

This invention relates to a lock structure, and especially to a lock housing and an adjustable face plate therefor.

The object of the present invention is generally to improve and simplify the construction and operation of lock structures of the character described; to provide a lock housing to which a face plate is pivotally attached to permit the face plate to be adjusted to the bevelled edge of a door; to provide a structure embodying a face plate, a frame and a lock housing, and in which the housing is secured to the frame, and the frame is pivotally connected to the face plate; to provide a frame which is substantially U-shaped and in which the arms of the U-shaped frame are sufficiently resilient and spring-like in construction to permit springing of the arms to attach or release the frame from the pivotal connection with the face plate; and further, to provide a housing which may be constructed of comparatively light sheet metal and, when secured to the U-shaped frame, will be reinforced thereby.

The lock structure of the present invention is shown by way of illustration in the accompanying drawings, in which

Fig. 1 is a perspective view showing the frame pivotally attached to the face plate;

Fig. 2 is a perspective view of the lock housing;

Fig. 3 is a perspective view of the frame;

Figs. 4 and 5 are perspective views of the front and rear sections, respectively, of the face plate;

Fig. 6 is a perspective view showing a modified form of face plate;

Fig. 7 is a perspective view showing a modified form of frame;

Fig. 8 is a plan view, partially in section, and partially broken away, showing the pivotal connection between the frame and the face plate;

Fig. 9 is a similar view showing the face plate tilted;

Fig. 10 is a cross section taken on line X—X of Fig. 11;

Fig. 11 is a side elevation, partially in section, showing a modified form of face plate and lock housing;

Fig. 12 is a section taken at right angles to Fig. 11, showing the face plate in tilted position;

Fig. 13 is a view similar to Fig. 12, showing the face plate without being tilted;

Fig. 14 is a perspective view of the modified form of face plate shown in Figs. 10 to 13, inclusive;

Fig. 15 is a perspective view of the forward end of the lock housing shown in Figs. 10 to 13, inclusive; and

Fig. 16 is a central, longitudinal section of the face plate shown in Fig. 14.

Referring to the drawings in detail, and particularly to Figs. 1 to 5, inclusive, A indicates a housing which is adapted to receive the knob spindle, the rollback mechanism, and the latch bolt of a door lock. The housing shown is preferably formed from comparatively light gauge sheet metal, as it is reinforced and materially stiffened by a frame, generally indicated at B (see Figs. 1 and 3). This frame is formed from fairly heavy strip steel and bent to form a pair of arms 2 and 3, and an integral end section 4. The forward ends of the arms are perforated, as at 14 and 15, and the function of these perforations will hereinafter be described.

The frame B, besides functioning to reinforce and stiffen the housing A, also serves the function of forming a pivotal connection between the housing and a face plate generally indicated at C. This plate is formed of two sections, 5 and 6; the section 5, to be known as the outer plate, has a rectangular opening 7 formed therein to receive and guide the latch bolt in the lock. It has two recesses 8 formed at opposite ends of the opening 7, and it is punched to form two tubular rivets 9. The plate 6, to be known as the inner plate, has a larger rectangular opening 10 formed therein, and is perforated at opposite ends, as indicated at 12, to receive the tubular rivets 9, and it is provided with two pintle lugs 11.

In actual practice, the outer ends of the arms 2 and 3 forming a portion of the reinforcing frame are pressed together a distance sufficient to permit them to be inserted in the opening 10 of the plate 6, and to clear the inner ends of the lugs 11. The arms are then released and will spring outwardly, and the lugs will thus enter the openings 14 of the arms and as such will form a pivotal connection between the plate 6 and the frame B. The outer plate 5 is next applied, and the rivets 9 are clinched over, as shown in Fig. 1, thus permanently assembling the outer and inner plates of the face plate. At the same time that the outer plate is applied to the inner plate, the recesses 8 will extend partially over the outer ends of the arms 2 and 3 of the frame, and it is thus secured against being sprung inwardly after the assembly has been made. The outer ends of the arms 2 and 3, or the corners, are cut off, as shown, to permit free pivotal movement, and the slots or perforations 14 are preferably provided with high points on opposite sides, as shown at 14^a, to permit free pivotal movement.

After the frame has been attached to the inner

face plate, and this in turn has been permanently secured to the outer face plate, the housing A may be slipped over the U-shaped frame. The forward end of the housing is notched, as shown at 16, to clear the pintle lugs 11, and back of said notches are formed pairs of lugs 17, which are bent inwardly and downwardly into the slots 15 in the arms, thus securing the housing to the arms of the frame. In Figs. 8 and 9, this assembly is clearly shown, and it is obvious therefrom that the face plate is given sufficient pivotal movement to take care of any bevel which may be formed on the edge of the door. That is, most doors are bevelled to permit a snug fit between the jamb and the door when the door is closed. In such instances the face plate will adjust itself to the bevelled face and it will there be permanently secured by passing screws through the tubular rivets into the edge of the door.

In Fig. 6 the inner face plate indicated at 6^a is slightly modified. In place of forming the pintles 11 thereon, strap-like members 11^a are formed, and the pintles proper, indicated at 11^b, are formed on the outer ends of the arms of the frame (see Fig. 7). The pivotal connection is thus formed by a mere reversal of the parts.

In Figs. 10 to 16 inclusive, a further modification is shown. In this instance, the frame B is entirely eliminated. The forward end of the housing, indicated at *a*, (see Fig. 15) is slotted at the four corners, as shown at 19. Two arms 20 are thus formed and these are provided with pintle lugs 21 at the outer ends. Inasmuch as the housing *a* is formed of sheet metal, the arms 20 are sufficiently resilient to permit springing action; that is, they are forced toward each other when inserted in the face plate shown in Figs. 14 and 16, and the housing is then pushed inwardly until the lugs 21 register with slots 22 formed in the face plate. They will then spring outwardly and a pivotal interlock is thus formed between the face plate and the housing.

The face plate may be circular in formation, as shown, or it may obviously be of rectangular shape, as shown in Figs. 1 to 6 inclusive. Where the face plate is circular, as shown in Fig. 14, the opening 23 will be rectangular or square, depending upon the shape of the latch bolt, or it may be partially round, as latch bolts sometimes are. A sleeve projects inwardly from the face plate, as shown at 24. This sleeve is slotted to form the slots 22. Spring fingers 25 may be formed by longitudinally slotting the sleeve, as indicated at 26. These fingers engage the interior opening formed in the door, and thus frictionally secure the face plate, whether it be tilted to conform to the bevelled edge of the door, as shown in Fig. 12, or whether the door is left with a straight edge, as shown in Fig. 13.

While these and other features of my invention have been more or less specifically described and illustrated, I wish it understood that various changes may be resorted to within the scope of the appended claims, and that the materials and finish of the various parts may be such as the experience of the manufacturer and varying conditions of use may demand.

Having thus described and illustrated my invention, what I claim and wish to secure by Letters Patent is:

1. In a lock structure of the character described, a lock housing, a face plate therefor, a pair of flexible arms carried by the housing, interlocking means on the face plate and means on the flexible arms movable into and out of engagement with the interlocking means by flexing with the arms.

2. In a lock structure of the character described, a lock housing, a face plate therefor, a pair of flexible arms carried by one end of the housing, and means forming a pivotal connection between said arms and the face plate, said flexible arms permitting the pivotal connection to be connected or disconnected by flexing of the arms.

3. In a lock structure of the character described, a lock housing, a face plate therefore, a pair of flexible arms carried by one end of the housing, interlocking means on the face plate, and means on the flexible arms movable into and out of engagement with the interlocking means by flexing of the arms, said means on the arms, and the interlocking means on the face plate forming a pivotal connection.

4. In a lock structure of the character described, a lock housing, a face plate therefor, a pivotal connection between the housing and the face plate, and a spring actuated yielding member in the pivotal connection to permit separation or assembly of the face plate and housing.

5. In the lock structure of the character described, a lock housing having upper and lower sections and a pair of side walls, said upper and lower sections being cut longitudinally to form a pair of flexible arms, a face plate for the housing, interlocking means on the face plate and means on the flexible arms movable into and out of engagement with the interlocking means by flexing of the arms.

6. In the lock structure of the character described, a lock housing having upper and lower sections and a pair of side walls, said upper and lower sections being cut longitudinally to form a pair of flexible arms, a face plate for the housing, interlocking means on the face plate and a lug on each arm movable into and out of engagement with the interlocking means by flexing of the arms.

7. In a lock structure of the character described, a lock housing having upper and lower sections and a pair of side walls, said upper and lower sections being cut longitudinally to form a pair of flexible arms, a circular face plate for the housing, an annular flange on the rear side of the face plate and adapted to telescope over one end of the housing, said annular flange having a pair of opposed openings formed therein and a lug on each arm movable during flexing of the arms into or out of the opposed openings in the annular flange to interlock or release the face plate with relation to the housing.

WALTER R. SCHLAGE.