Nov. 3, 1931. W. R. SCHLAGE 1,829,815

DOORLOCK HOUSING

Filed Jan. 3, 1931 2 Sheets-Sheet 1

Fig. 4.

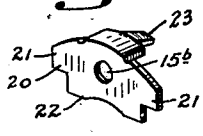


Fig. 1.

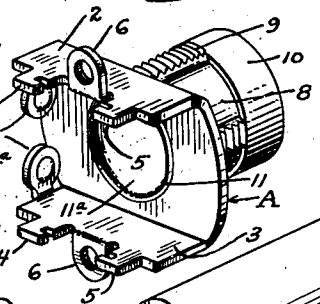


Fig. 2.

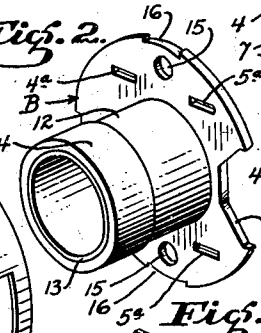


Fig. 6.

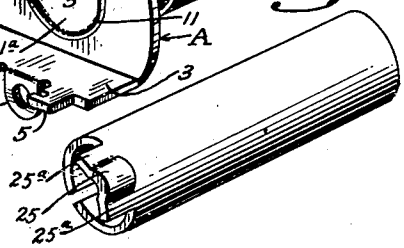


Fig. 3.

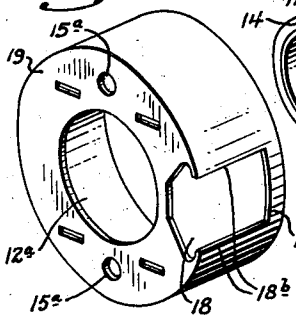


Fig. 5.

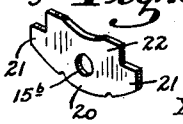


Fig. 7.

Fig. 8.

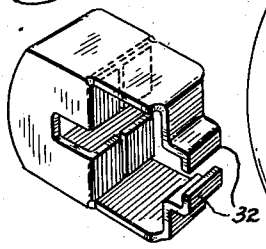


Fig. 9.

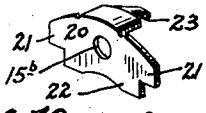
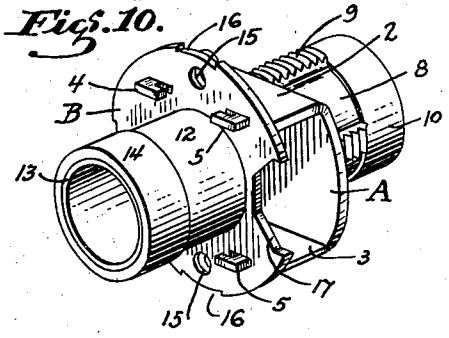


Fig. 10.



INVENTOR.
Walter R. Schlage.

BY
Townsend, Loftus & Abbett
ATTORNEYS.

Nov. 3, 1931. W. R. SCHLAGE 1,829,815

DOORLOCK HOUSING

Filed Jan. 3, 1931 2 Sheets-Sheet 2

Fig. 11.

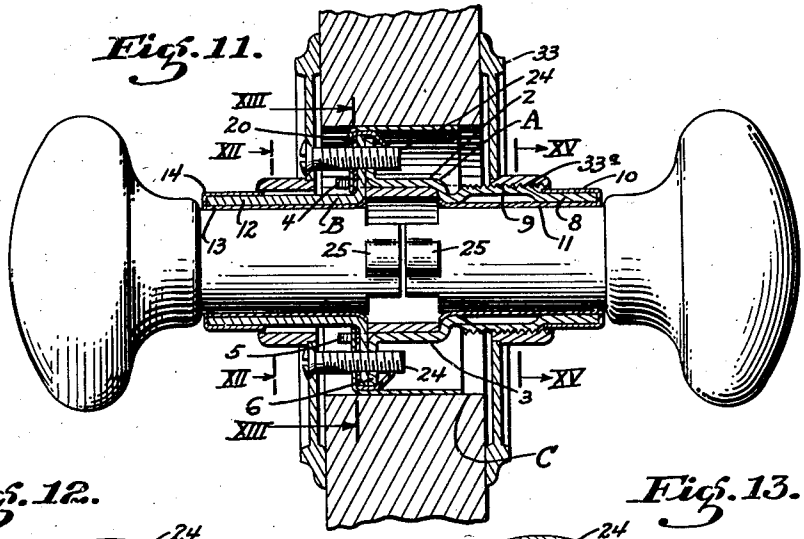


Fig. 12.

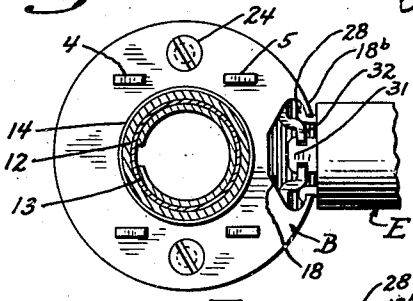


Fig. 13.

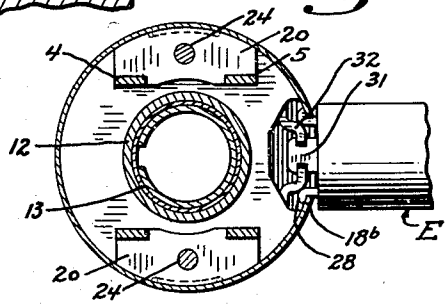


Fig. 14.

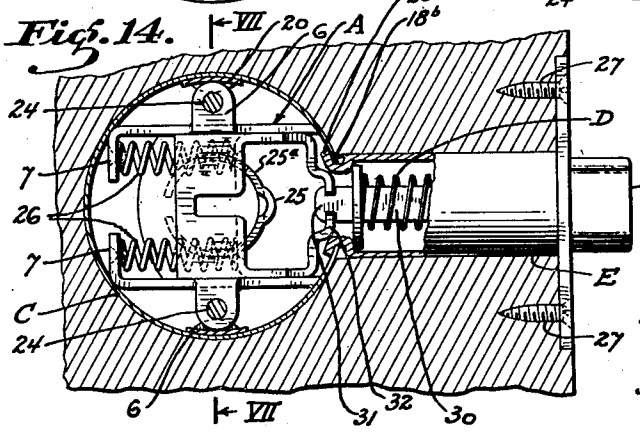


Fig. 16.

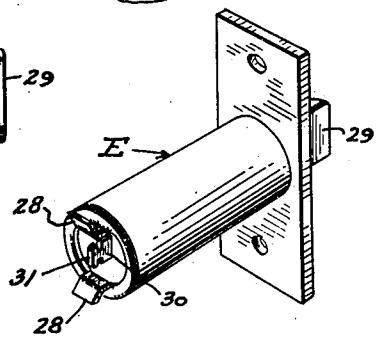
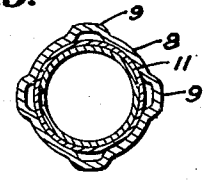


Fig. 15.



INVENTOR.
Walter R. Schlage.

BY
Townsend, Loftus & Abbett
ATTORNEYS.

Patented Nov. 3, 1931 1,829,815

UNITED STATES PATENT OFFICE

WALTER R. SCHLAGE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO SCHLAGE LOCK COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA

DOORLOCK HOUSING

Application filed January 3, 1931. Serial No. 506,388.

This invention relates to a door lock housing structure, the invention being an improvement on my two issued patents entitled "Door lock", No. 1,674,841, issued June 26, 1928, and No. 1,751,101, issued March 18, 1930, and being especially an improvement on the structure shown in my co-pending application Serial No. 239,380, entitled "Door latch", filed December 12, 1927.

The housing structures shown in my two issued patents and the mechanism cooperating therewith are so constructed that the parts forming the respective housings, mechanisms, etc., may be formed from sheet metal by punch and die operations and while door latches or locks so constructed are entirely satisfactory for most installations, such as interior doors of buildings and the like, they are not as rugged and heavy as might be desired for large front doors and like installations.

The structure shown in my co-pending application above referred to was particularly intended to take care of heavy front door installations and the lock housing was, for that reason, constructed of fairly heavy cast metal.

I have now found that by slightly changing the construction of the lock housing shown in my co-pending application that it is possible to form the parts thereof from heavy sheet metal by punch and die operations. The object of the present invention is accordingly that of generally improving and simplifying the construction and operation of lock housing structures of the character described; to provide a housing structure which may be formed from comparatively heavy sheet metal by punch and die operations; to provide a housing structure consisting of two main separable sections which may be quickly assembled and when assembled insures rigidity and perfect alignment; to provide means for interlocking the housing sections when assembled; and, further, to provide an auxiliary housing to aid general appearance and to insure retention of the interlocking means.

The invention is shown by way of illustration in the accompanying drawings, in which—

Fig. 1 is a perspective view of one the lock housing sections,

Fig. 2 is a perspective view showing the other lock housing section,

Fig. 3 is a perspective view showing the auxiliary or cover housing,

Figs. 4 and 5 are perspective views of the retaining clips,

Fig. 6 is a perspective view of one of the spindles,

Fig. 7 is a longitudinal, vertical section taken on line VII—VII of Fig. 14,

Fig. 8 is a perspective view of the retractor,

Fig. 9 is another perspective view of one of the retaining clips,

Fig. 10 is a perspective view showing the two main housing sections assembled and ready to receive the retaining clips,

Fig. 11 is a longitudinal, vertical section taken on line VII—VII of Fig. 14, but showing a modification of the mechanism whereby the escutcheon plate is adjustably secured,

Fig. 12 is a cross section taken on line XII—XII of Fig. 11,

Fig. 13 is a cross section taken on line XIII—XIII of Fig. 11,

Fig. 14 is a section taken on line XIV—XIV of Fig. 7,

Fig. 15 is a cross section taken on line XV—XV of Fig. 11,

Fig. 16 is a perspective view of the latch unit.

Referring to the drawings in detail and particularly Figs. 1 to 5, inclusive, A and B indicate the two main parts forming the lock housing. The part or section indicated at A consists of an end plate on which are formed two right angular bent flanges 2 and 3. These flanges are formed with pairs of lugs, such as shown at 4 and 5, and they are also provided with intermediate lugs 6 which are perforated and threaded to receive retaining screws as will hereinafter be described. The flanges 2 and 3 are provided with end lugs 7 which will hereinafter be referred to as spring supporting lugs. The section A is otherwise provided with an integral hub 8 and this is exteriorly threaded as shown at 9 and it is furthermore provided

with a removable end cap 10 and a bushing 11.

The other section forming the lock housing and indicated at B consists of a circular plate as shown which is provided with an integral hub 12. This is bushed as shown at 13 and is provided with an exterior end cap 14. The circular plate is slotted as shown at 4*a* and 5*a* to receive the lugs 4 and 5. It is furthermore perforated as shown at 15 in alignment with the lugs 6 to permit the retaining screws to pass through and the peripheral edge is notched as shown at 16 to receive the retaining clips shown in Figs. 4 and 5, and a cut away portion is formed at 17 which aligns with a similar cut away portion 18 formed on the auxiliary housing shown in Fig. 3. The function of the cut away portions 17 and 18 will hereinafter be described.

The auxiliary housing or cover section shown in Fig. 3 is cylindrical in shape and it is provided with an end flange 19 which is slotted to permit the ends of the lugs 4 and 5 to extend therethrough and it is perforated as at 15*a* to align with the perforations 15 and the perforated lugs 6. The end flange 9 is provided with a central opening indicated at 12*a* to permit the hub 12 to pass therethrough and the end flange is cut away as previously stated at 18 and the cylindrical portion is cut away as shown at 18*a* to form a pair of flanges 18*b* whereby an interlock is formed between the housing and the latch unit shown in Fig. 16, as will hereinafter be described.

The retaining clips are shown in Figs. 4, 5 and 9. They are identical in construction and their function is two-fold, first that of retaining the main sections A and B of the lock housing when assembled and, secondly, that of providing friction fingers whereby a pair of retaining screws are secured against rotation. The retaining clips are flat plates constructed of comparatively thin metal, these plates being indicated at 20. The central portion of the plate is perforated as at 15*b* to align with the perforations 15*a*, 15 and the perforated lugs 6. A pair of end shoulders 21 are formed to rest on top of the lugs 4 and 5 and a central downwardly projecting section 22 is provided which is adapted to enter between the lugs 4 and 5 in slots 4*b* and 5*b* formed therein.

The housing sections are assembled by passing the lugs 4 and 5 through the slots 4*a* and 5*a* formed on the section B, the two sections when assembled assuming the position shown in Fig. 10. The retaining clips are then inserted between the lugs 4 and 5 and the lock sections are thus interlocked and retained by means of the clips, each clip being provided with a spring finger 23 which frictionally engages the retaining screws shown at 24, see Figs. 7 and 11, the notches 16 formed in the peripheral edge of the section B forming seats for the fingers 23 and also insuring alignment of the clips with the slotted lugs 4 and 5 and with the perforations indicated at 15.

By referring to Figs. 1 to 5, inclusive, it will be noted that the structure employed is fairly similar to the housing structure disclosed in Fig. 1 of my co-pending application, the auxiliary housing shown in Fig. 3 in this application being almost identical to the auxiliary housing shown in Fig. 2 in my co-pending application. The main housing structure shown in the co-pending application was made of cast material, the sections 1 and 2, equivalent to the sections A and B shown in this instance, were formed integral by being connected by transverse plates 3 and 4. Where the housing structure was formed of cast metal and the parts formed integral it was only possible to introduce the spindles by forming grooves 18 in the hubs indicated at 5 and 6 as it was otherwise impossible to pass the noses 15 of the respective spindles through the hubs. The spindles employed in the present instance are identical. They are shown in Fig. 6, the nose being indicated at 25 and the rollback portion at 25*a*. With the housing constructed of two separable section as shown in the present application it is possible to insert the spindles through the inner openings indicated at 11*a*, thus bringing the noses 25 into engagement with the inner faces of the plates A and B, hence eliminating grooving of the hubs 10 and 12 and furthermore permitting these hubs to be provided with bushings as shown at 11 and 13. Where the housing was constructed as a casting as shown in the co-pending application it was also necessary to introduce locking washers 20 as shown in Fig. 7 of that application in order to prevent endwise removal of the spindles when inserted. Such locking washers are entirely unnecessary in the present structure. Furthermore, it is obvious that where the parts are made of stamped sheet metal ninety per cent or more of machine work is eliminated. On the other hand where the housing structure is cast as shown in Fig. 1 of my co-pending application practically all faces have to be machined thereby materially increasing the cost.

The assembling of the two sections of the main lock housing and the parts supported thereby is accomplished as follows: A retractor, such as shown in Fig. 8, is first inserted between the guide flanges 2 and 3 of the housing section A. A spindle, such as shown in Fig. 6, is next inserted through the opening 11 and a similar spindle is inserted in the opening 11 of the housing section B. A pair of springs 26 are introduced between the spring supporting lugs 7 and the retractor and the housing sections are then as-

sembled by passing the lugs 4 and 5 through the slots 4*a* and 5*a* in the housing section B. The retaining clips shown in Figs. 4 and 5 are next placed in position and the auxiliary housing section shown in Fig. 3 is then applied. This housing adds to the general appearance of the structure and it furthermore acts as a means for securing the retaining clips in place.

The lock housing sections with the parts supported thereby when assembled as described are ready for insertion in a door. The door is prepared by first boring a hole transversely therethrough as shown at C, see Fig. 14, and then by drilling a second hole through the edge of the door at right angles thereto as indicated at D. The latch unit, such as shown in Fig. 16 and generally indicated at E, is then inserted in the opening D and it is secured when inserted by means of screws such as shown at 27. The main housing, together with the parts supported thereby, is then inserted endwise in the opening C and when so inserted flanges 18*b* of the auxiliary housing will straddle and interlock with a pair of fingers 28 formed on the inner end of the latch unit, thus forming an interlock between the latch unit and the main housing. The latch or bolt proper indicated at 29 is provided with a retractor bar 30 which terminates in a head 31. This is engaged by a pair of fingers 32 formed on one end of the retractor and an interlock is thus formed not only between the main lock housing and the latch unit E, but an interlock is also formed between the retractor and the retractor bar.

With the parts inserted and assembled as described it is now only necessary to secure the main housing against removal from the door and to apply the knobs. This is accomplished as follows: An escutcheon plate 33, see Fig. 7, is slipped over the end of the hub 8. This plate is provided with a hub 34 which is externally threaded and this hub engages internal threads 35 formed in the auxiliary housing. By rotating the plate 33 threaded engagement is made between the parts and the main housing may thus be adjusted transversely of the door until it assumes a central position with relation to the latch unit E. This adjustment is desirable as it permits the latch mechanism as a whole to be fitted to doors of varying thickness.

After the escutcheon plate 33 has been applied and the proper adjustment has been made a second escutcheon plate, such as shown at 36, is applied. This is slipped over the hub 12, and it is secured against the face of the door by means of screws 24, these screws extending through perforations made in the plate 36 and through the several aligning perforations 15*a*, 15*b*, 15, previously described, and the threaded lugs 6, the screws having a threaded engagement with these lugs and by tightening the screws the escutcheon plate 33 is pulled tightly against the opposite face of the door. The knobs are then finally applied and the installation of the latch mechanism is completed.

Fig. 11 shows a section of the latch mechanism which is substantially identical to the section shown in Fig. 7, the only difference being that the hub of the escutcheon plate indicated at 33*a* is internally threaded to engage threads 9 formed on the exterior surface of the hub 8. In other words, an adjustable escutcheon plate is provided in the structure shown in Fig. 11, but the adjustable connection is made between the hub of the main lock housing and the escutcheon plates while in Fig. 7 the adjustable connection is made between the auxiliary housing and a secondary hub formed on the escutcheon plate.

No detailed description has been made of the spindles shown in Fig. 6, nor has any detailed description been given of the retractor shown in Fig. 8, or of the latch unit shown in Fig. 16, as these parts are identical to the parts shown in my co-pending application. In fact, it may be stated that the escutcheon plates 33 and 36, the knobs and in fact the entire mechanism employed is identical to that shown in my co-pending application, the only difference being the construction of the main latch housing, to-wit, the sections indicated at A and B. The difference consists in constructing this housing of two separable sections. By constructing the housing in two sections it is possible to form the same from heavy sheet metal by punch and die operations. It furthermore makes it possible to provide interior bushings for the hubs formed on the respective sections and to insert the spindles from the inner faces of the plates A and B, thus eliminating the lock washers shown in my co-pending application. Greater rigidity and strength is obtained by the present structure and cost of manufacture is very materially reduced as machine operations are almost entirely eliminated.

The threaded portion formed on the hub 8 of the section A and threaded at 9 is in this instance shown in sections, that is, the metal forming the hub 8 is bumped or forced outwardly in the manner of ribs and these ribs are then passed through a die and threaded. The entire surface may, however, be threaded if desired. The removable end caps shown at 10 and 14 are also desirable features as they can be made of different kinds of metal and of different colors, thus permitting changes to suit varying shapes, forms and color of trims.

While certain features of the present invention are more or less specifically described, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finish of the several parts em-

ployed may be such as the manufacturer may decide, or varying conditions or uses may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In a door latch of the character described a main housing comprising a pair of separable plates, a hub member on each plate, a pair of guide members on one plate forming a spacing between the plates, and means for connecting and interlocking the plates.

2. In a door latch of the character described a main housing comprising a pair of separable plates, a hub member on each plate, a pair of guide members on one plate forming a spacing between the plates, the opposite plate having a plurality of perforations formed therein, a plurality of lugs formed on the guide members and adapted to project through the perforations when assembling the plates, and means for securing the lugs against removal when the plates are assembled.

3. In a door latch of the character described a main housing comprising a pair of separable plates, a hub member on each plate, a pair of guide members on one plate forming a spacing between the plates, the opposite plate having a plurality of perforations formed therein, a plurality of lugs formed on the guide members and adapted to project through the perforations when assembling the plates, said lugs being slotted, and retaining clips insertable between the slotted lugs and the perforated plate to secure the plates against separation when assembled.

4. In a door latch of the character described a main housing comprising a pair of separable plates, a hub member on each plate, a pair of guide members on one plate forming a spacing between the plates, the opposite plate having a plurality of perforations formed therein, a plurality of lugs formed on the guide members and adapted to project through the perforations when assembling the plates, said lugs being slotted, retaining clips insertable between the slotted lugs and the perforated plate to secure the plates against separation when assembled, and means to secure the retaining clips against removal.

5. In a door latch of the character described a main housing comprising a pair of separable plates, a hub member on each plate, a pair of guide members on one plate forming a spacing between the plates, the opposite plate having a plurality of perforations formed therein, a plurality of lugs formed on the guide members and adapted to project through the perforations when assembling the plates, said lugs being slotted, retaining clips insertable between the slotted lugs and the perforated plate to secure the plates against separation when assembled, and an auxiliary housing adapted to enclose the plates and the space between them and secure the retaining clips against removal.

WALTER R. SCHLAGE.