Dec. 5, 1939. W. R. SCHLAGE 2,182,503

LOCK MOUNTING FOR HOLLOW METAL DOORS

Filed Jan. 17, 1938

Fig. 1.

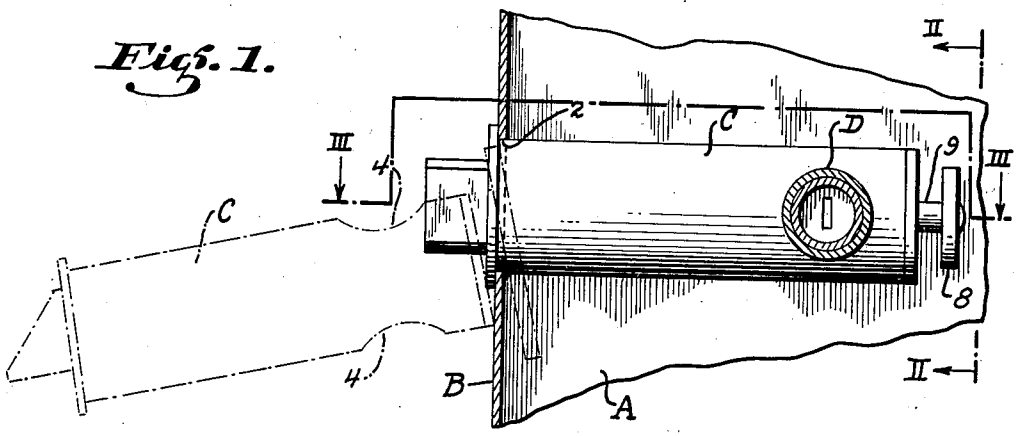


Fig. 2.

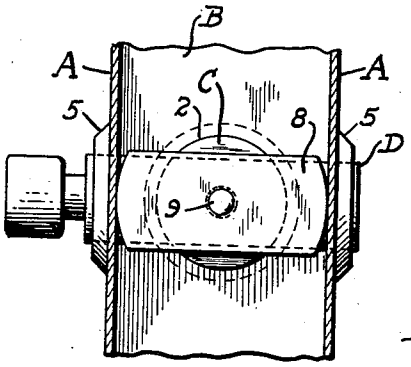


Fig. 3.

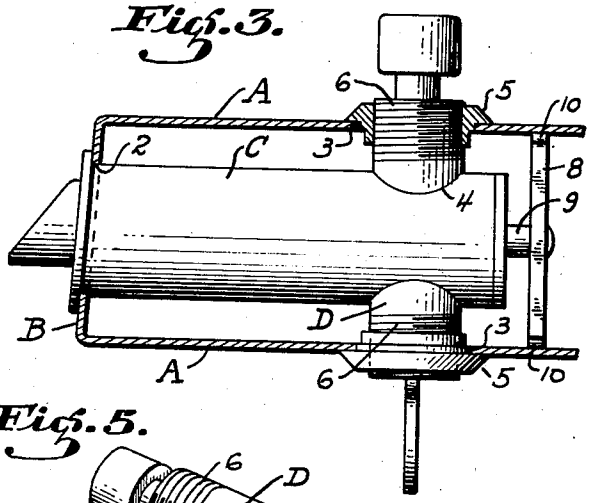


Fig. 5.

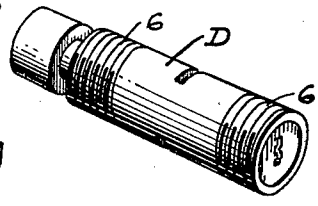


Fig. 4.

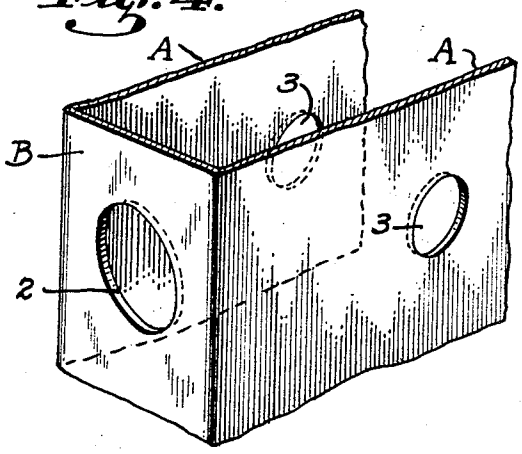
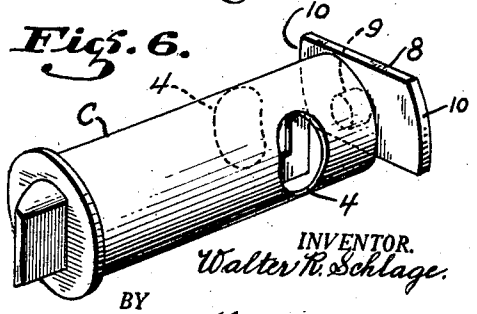


Fig. 6.



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LOCK MOUNTING FOR HOLLOW METAL DOORS

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Application January 17, 1938, Serial No. 185,371

4 Claims. (Cl. 292—337)

This invention relates to a lock mounting for hollow metal doors, and especially to a modification or variation of the reinforcing member disclosed in my Patent No. 2,091,248, entitled "Lock mounting for hollow metal doors", issued August 24, 1937.

In most buildings where metal doors are used, it is generally found that the stile of the door is hollow, as it is formed from sheet metal. The mounting of a lock in a door of this character is a problem, as fastening or securing means such as bolts, screws or the like tend to pull the opposite faces of the stile toward each other and thereby bend or buckle the faces of the stile. In the structure disclosed in my issued patent, No. 2,091,248, a reinforcing member is shown which is interposed between the inner faces of the stile and thereby prevents bending or other impairment, but the reinforcing plate can only be used for certain types of locks, or where comparatively large openings are formed in the stile for the reception of the lock. There are types of locks which require comparatively small openings in the face of the stile, and I have accordingly provided a reinforcing plate which may be inserted, together with a portion of the lock mechanism, through an opening formed in the edge of the door.

One type of lock and reinforcing plate employed is shown by way of illustration in the accompanying drawing, in which

Fig. 1 is a side elevation partially in section, showing the latch bolt housing inserted in a door, said view also showing in dotted lines the manner in which the reinforcing plate is inserted through the opening in the edge of the door;

Fig. 2 is a cross-section of the stile taken on line II—II of Fig. 1;

Fig. 3 is a plan section taken on line III—III of Fig. 1;

Fig. 4 is a perspective view of a portion of the stile;

Fig. 5 is a perspective view of the housing containing the latch bolt actuating mechanism; and

Fig. 6 is a perspective view of the inner end of the latch bolt housing and the spacing and reinforcing plate carried thereby.

Referring to the drawing in detail, and particularly Fig. 4, A indicates the opposite faces and B the edge of the stile of a hollow metal door. Formed in the edge of the stile is an opening 2, and formed in the opposite faces A of the stile are openings 3—3. The lock to be mounted in the stile of the door is in this instance shown as formed of two housings, to wit, a housing C containing a latch bolt mechanism and a housing D containing a latch bolt actuating mechanism. In as much as the mechanisms contained in the respective housings may vary to a considerable degree, and furthermore form no part of the invention here involved, all illustration in reference to the mechanism will be eliminated.

Both of the housings C and D, as clearly shown in Figs. 5 and 6, are tubular in form. To mount the housings in the door, the housing C is first inserted through the opening 2 in the edge of the door. The inner end of the housing has two openings, such as indicated at 4—4, formed therein, which align with the openings 3—3 in the stile when the housing C is fully inserted. The housing D is next inserted through the openings 3—3, and when so inserted passes through the openings 4—4 in housing C, thereby securing the housing C against endwise removal through the opening 2. To secure the housing D against removal when inserted, escutcheon plates 5—5 are applied to the opposite ends, and as the escutcheon plates have a threaded connection with the ends of the housing D, as shown at 6—6, it is possible to screw them up tight to secure the lock firmly in the door. This tightening of the escutcheon plates or similar fastening means such as screws, bolts, etc., causes the opposite faces of the stile to bend inwardly, and while no particular damage is done, this causes an unsightly appearance.

To avoid such bending or buckling, a combination spacing and reinforcing plate 8 is employed. This plate is riveted or otherwise secured to the inner end of the latch bolt housing, as indicated at 9, and, when inserted and properly positioned in the stile, extends crosswise thereof between the inner faces, and at a point close to the fastening or securing means, thereby supporting the faces of the stile against bending or buckling when the escutcheon plates or other fastening means employed are tightened.

It will be noted that the combination spacing and reinforcing plate 8 is permanently secured to the inner end of the latch bolt housing, and as such must be inserted in unison with the same. The mode of insertion is clearly shown in dotted lines in Fig. 1. That is, housing C is turned so that the plate 8 assumes an upright position. In this position, it is passed through the opening 2 in the stile, as shown in dotted lines in Fig. 1. The housing is then straightened out and pushed inwardly and then rotated a half revolution to bring the plate to a position crosswise of the stile, where the rounded ends 10 of the plate will engage the inner faces, as clearly shown in Figs.

2 and 3. To insert such a plate through the comparatively small openings 3—3 formed in the opposite faces of the stile would be difficult, and to insert the plate by itself and later attempt to connect it with one or another of the housing members would also be difficult, as the plate might become dislodged or knocked loose during the insertion of the respective housings, and thus would fall to the bottom of the stile, thereby necessitating removal of the door from its hinges and turning the door upside down to permit removal and reinsertion of the plate. The securing of the spacing and reinforcing plate to the latch bolt housing is thus a great advantage as it prevents loss and displacement of the plate and furthermore insures correct positioning of the same with relation to the respective housings and the fastening or lock securing means when the lock mechanism is placed in the door, and when the escutcheon plates are applied and screwed up tight, buckling or bending will obviously be prevented.

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

1. The combination with a hollow stile of a door, said stile having openings formed in the edge and in the opposite faces for the reception of a latch bolt unit, of a combination spacing and reinforcing member secured on the latch bolt unit and insertable with said unit through the opening in the edge of the door, said member engaging the inner faces of the stile when the latch bolt unit is fully inserted and properly positioned.

2. The combination with a hollow stile of a door, said stile having openings formed in the edge and in the opposite faces for the reception of a latch bolt unit, of a combination spacing and reinforcing member secured on the latch bolt unit and insertable with said unit through the opening in the edge of the door, said member engaging the inner faces of the stile when the latch bolt unit is fully inserted and properly positioned, and fastening means extending transversely of the stile to clamp said spacing and reinforcing member between the inner faces of the stile.

3. The combination with a hollow stile of a metal door, said stile having openings formed in the edge and in the face for the reception of a latch bolt unit and a latch actuating unit, of a combination spacing and reinforcing member insertable in the stile and adapted to engage the inner faces of the stile, means for supporting said member on the latch bolt unit in a position close to the latch actuating unit, a threaded extension on each end of the latch bolt actuating unit and escutcheon plates having a threaded connection therewith, said plates securing the latch bolt actuating unit in the door and clamping the spacing and reinforcing member between the inner faces of the stile.

4. The combination with the hollow stile of a door, said stile having openings formed in the edge and in the opposite faces for the reception of a latch bolt unit, of a stud secured to the inner end of the latch bolt unit, a combination spacing and reinforcing plate secured to the stud and spaced from the end of the latch bolt unit, said plate being insertable with the latch bolt unit through the opening formed in the edge of the door, and said plate engaging the inner faces of the stile when the latch bolt unit is fully inserted and properly positioned.

WALTER R. SCHLAGE.