June 15, 1948. E. L. McEWEN 2,443,396

DOOR LOCK

Filed Oct. 11, 1946

Fig. 1

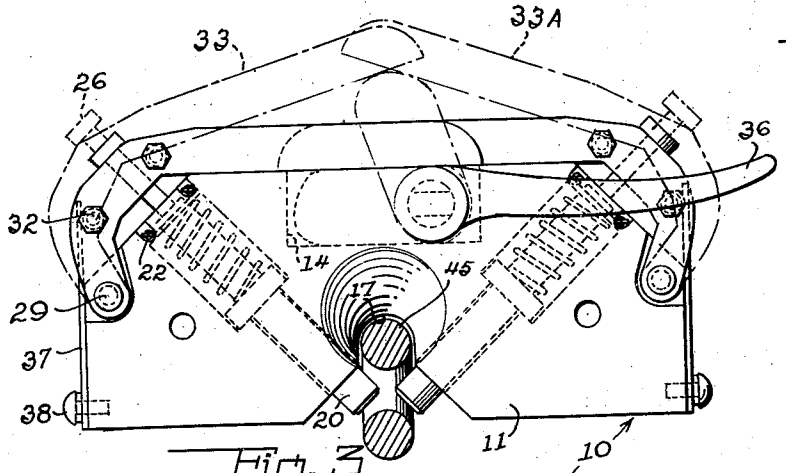


Fig. 2

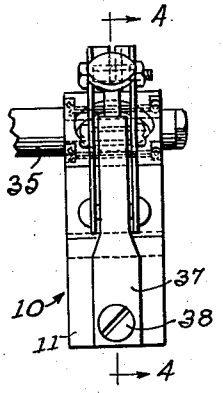


Fig. 3

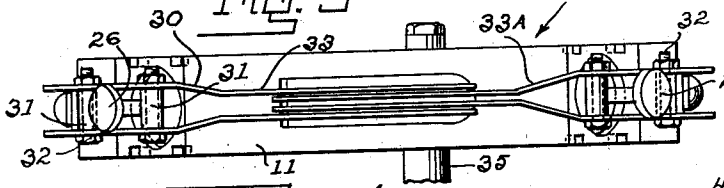


Fig. 5

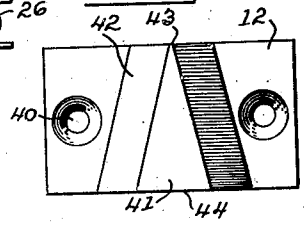


Fig. 4

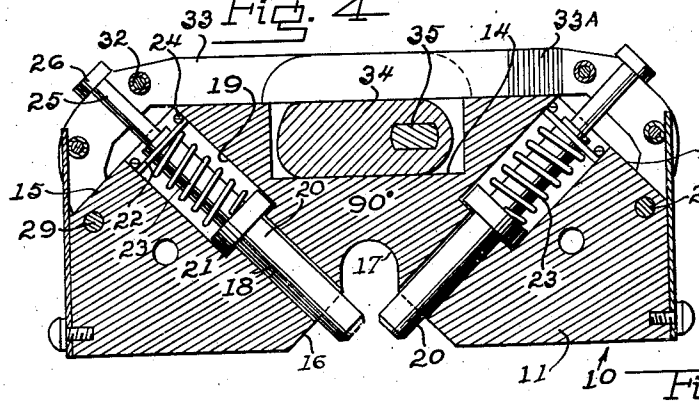


Fig. 6

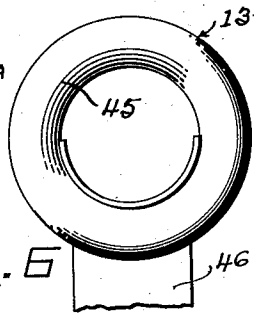


Fig. 7

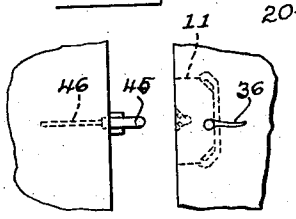
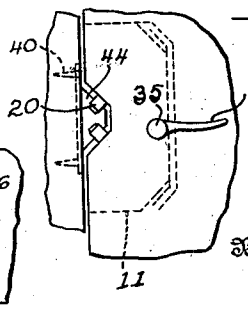


Fig. 8



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DOOR LOCK

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5 Claims. (Cl. 292—34)

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This invention appertains to a lock applicable to sliding doors as well as to swinging doors. It is very simple in construction easy to manufacture at low cost, requiring minimum of machine work, and it is very strong as all parts are solid and substantial and cannot get out of order.

These and other objects and advantages will be readily understood from the subjoined description with the aid of the attached drawing in which one embodiment of the invention is illustrated.

Figure 1 is a side elevation of the main part of the lock;

Figure 2 an end view of Figure 1;

Figure 3 a top plan view of Figure 1;

Figure 4 a vertical section taken on line 4—4 of Figure 2;

Figure 5 a face view of a V-shaped latch plate for use with swinging doors;

Figure 6 is a similar view of a ring shaped latch plate for sliding doors;

Figure 7 is a fragmentary face view of a pair of sliding doors partly open with the ring latch plate of Figure 6 in position; and

Figure 8 a fragmentary face view of a pair of swinging doors with a latch plate of Figure 6 in closed position.

Like reference numerals denote the same details in the different views.

In the drawing, the main portion of the lock; denoted in general by numeral 10, is fastened in the edge of one of a pair of doors or in the moving door if only one is movable, while the matching latch portion 12 or 13 is carried in the door frame, or in the stationary door in case only one of them is movable.

This main lock portion 10, as here shown, consists of a solid, metal block 11, provided with a rectangular shallow pocket or depression 14 in the middle of its top edge. The right and left top corners 15 are cut off slantingly at 45° angle and similarly an inverted V-shaped cut with slanting surfaces 16 is provided right across the block 11 at its bottom; surfaces 15 and 16 being parallel, while the apex of the inverted V-cut is rounded as at 17.

From each slanting corner surface 15 and perpendicularly thereto, is provided a cylindrical bore having a small diameter 18 at its lower end, opening thru the slanting surface 16, and a larger diameter 19 at its upper half. In each of these bores is housed a plunger or latch bolt 20 the axes of which thus forming a 90° angle to each other. The main portion of each bolt 20 has a diameter to fit the small bore 18 and midway

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between its ends the bolt is provided with a collar 21 fitting in the larger bore 19 in the block 11. In the upper end of the bore 19 is placed an abutment collar and between said collar 22 and the fixed collar 21 is inserted a coil spring 23. This abutment collar 22 is fixed in position in bore 19 by a couple of split pins 24 extending from one side to the other of the block 11. A narrow shank 25 is formed at the upper end of the bolt 20 having at its extreme end a head 26.

At the left end of the block 11 as seen in Figures 1, 3 and 4, is pivoted at 29 an L-shaped lever consisting of two substantially parallel arms 30 spaced apart by a pair of sleeves 31, thru which are inserted a pair of bolts 32 drawn up tightly to form a rigid connection between said arms 30. When at rest, the long shanks 33 extend along the top surface of the block 11 to beyond the farther end of the recess or pocket 14 as seen in full lines in Figures 1 and 4. Similarly another lever with its long arms 33*a* pivoted at 29*a* extends along the top of the block and in a similar manner reaches across the pocket 14.

When in position of rest, the heads 26 of the latch bolts 20 abut the slanting surfaces *a* at the bend of the levers pushed down by the springs 23.

In the pocket 14 is lodged a cam member 34 which rotates with a shaft 35 to which is keyed an operating handle 36. This shaft 35 extends across the pocket 14 near an end thereof. The cam member 34 when in position of rest, substantially fills the pocket or depression 14, Figures 1 and 4.

Upon swinging the handle 36 in one direction, the outer end of the cam member 34 will press against the lever arms 33 and 33*a* thereby moving them into the dot and dash position seen in Figure 1. This movement of the lever arms 33 and 33*a* will cause the heads 26 of the latch bolts 20 to be retracted to release the both from the latch plate 12. A flat spring 37 is provided to hold the lever arms in position of rest. These springs are secured by screws 38 at the right and left ends of the block 11.

As particularly shown in Figures 5 and 8 the latch plate 12 has a forwardly projecting wedge portion 41 extending beyond the door frame F to which it is attached by screws 40. The outer surface of the wedge 41 is triangular and parallel to the bottom surface of the plate 12, while its sides 42 are slanting downwardly towards the plate. The apex of the wedge 41 is immediately adjacent to an edge of the plate 12 having a broad base 44 at the opposite edge of the plate. It will thus be seen that the latch plate 12 is

secured on the door frame F with the apex 43 of the wedge 41 outwardly to meet the swinging door and with its base 44 on the inner side so that the wedge 41 will enter between the tips of the opposing latch bolts 20 and force them apart until the base 44 of the wedge 41 has passed them. In this manner the latch bolts 20 will close over the wedge base 44 and thus lock the door.

Referring now to Figures 6 and 7, these figures illustrate a ring shape latch block 13 which is used for sliding doors. The main part of the latch block 13 consists of a ring 45 carried on a long shank 46 which is secured in the edge face of a sliding door. Upon the door the ring 45 will enter edge ways between the points of the latch bolt 20 and thereby forcing them apart to rest in the rounded pocket portion 17 between the slanting surfaces 16, whereupon the tips of the latch bolt 20 will close in behind the ring 45 and thus lock the door.

It is to be understood that the invention as herein disclosed may be varied from the details described and shown without departure from the spirit of the subjoined claims.

I claim:

1. A door latch comprising a substantially solid block, and a latch plate cooperating therewith, a pair of latch bolts slidably mounted in said block with their axes at substantially right angles to each other in the middle plane of the block, means for holding the bolt ends in adjacent, closed position and other means for withdrawing them into open position.

2. A door lock as described in claim 1, wherein said closing means comprise springs urging the tips of said bolts together for engaging said latch plate, heads provided at the outer ends of said bolts, a lever for each bolt mounted to oscillate on a pivot pin thru said block and a flat spring secured adjacent said pivot pins and adapted to fold said levers together under said head.

3. A door lock as described in claim 1, wherein said closing means comprise springs urging the tips of said bolts together for engaging said latch plate, heads provided at the outer ends of said bolts, a lever for each bolt mounted to oscillate on a pivot pin thru said block and a flat spring secured adjacent said pivot pins and adapted to fold said levers together under said head; said cam being housed in a pocket formed in said block beneath said folding levers, so as to contact therewith, whereby upon operating said handle, said shaft will swing the cam into upright position to raise the adjacent portions of the folding levers, which in turn will withdraw the bolts by contacting with their heads.

4. A door lock as described in claim 1, said latch plate being secured in a frame for a sliding door, and consisting of a ring shaped portion adapted to be forced in between the tips of the latch bolts to be pushed beyond said tips in a recess formed behind the tips of said bolts.

5. A door lock as described in claim 1, said latch plate being wedge shaped for cooperating with said latch bolts on a swinging door and comprising a raised V-shaped portion on the latch plate adapted to engage the tips of said bolts to force them apart thereby passing them to be locked thereby on the other side of the bolts.

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