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MORTISE TYPE LATCH ASSEMBLY WITH REVERSIBLE BLOCKER MEANS FOR KNOB DETENT

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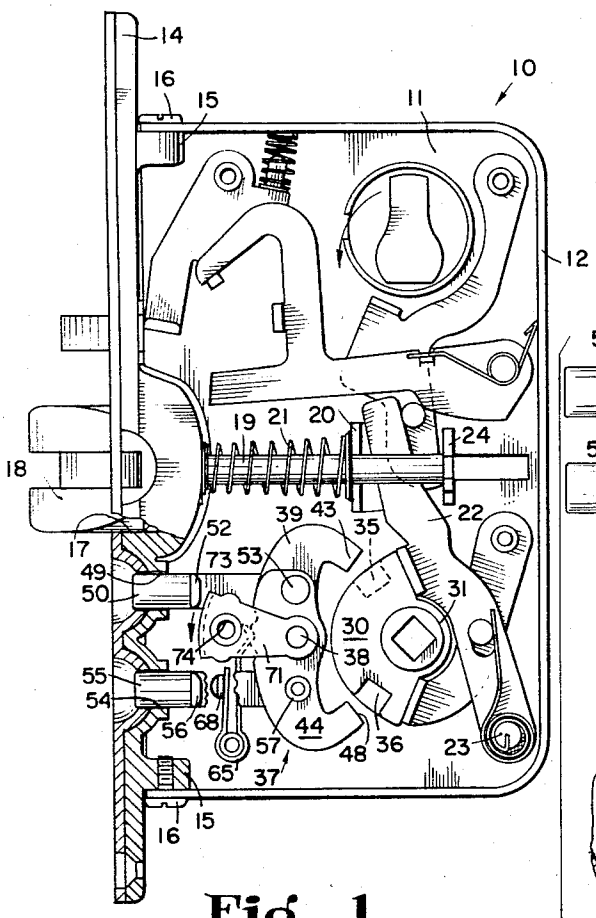


Fig. 1

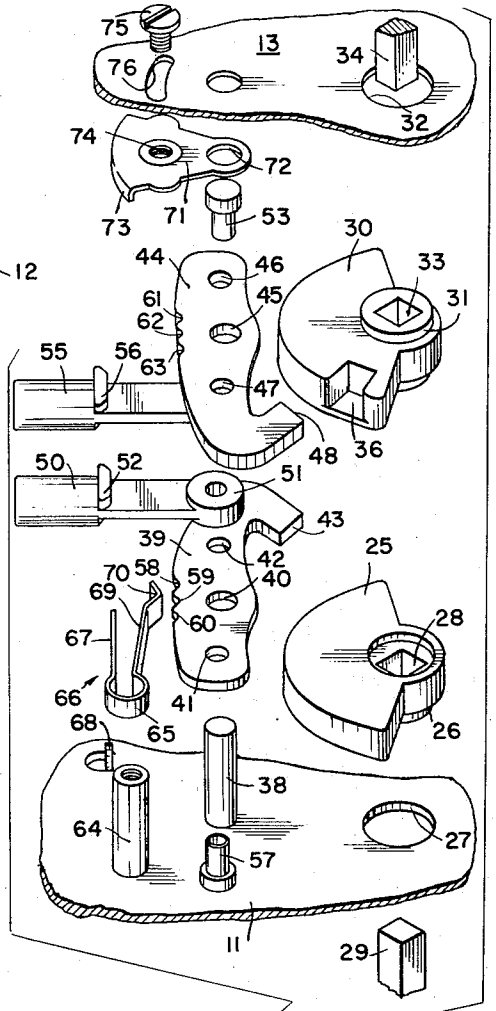


Fig. 2

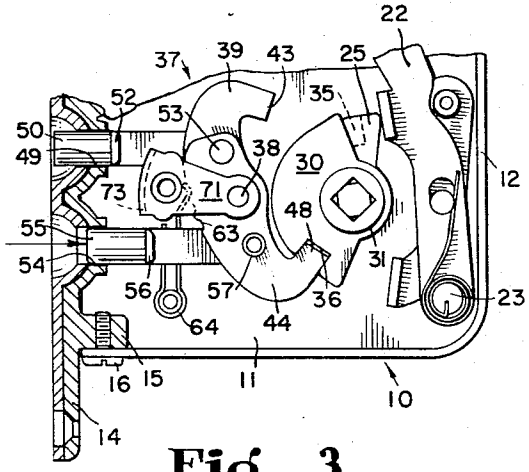


Fig. 3

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MORTISE TYPE LATCH ASSEMBLY WITH REVERSIBLE BLOCKER MEANS FOR KNOB DETENT

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The present invention relates to a mortise type latch assembly, and more particularly to the provision, in such an assembly, of externally-accessible, reversible blocker means for the latch-retracting knobs.

In many environments, it is desirable to provide means, in a mortise type latch assembly, accessible through the face and/or finish plates, whereby the assembly may be blocked against actuation from the outside of the door, but without blocking the same against actuation from the inside of the door; and it is conventional to provide such blocking means. However, conventionally such assemblies are arranged either for association with a right hand opening door or for association with a left hand opening door; and it will be apparent that, if an assembly arranged for association with a right hand opening door is arranged, instead, with a left hand opening door, it will be the inside knob, rather than the outside knob which will be blockable. In all such devices heretofore known to me, it has been necessary to open the case of the assembly and substitute or rearrange internal parts in order to adapt an arrangement intended for mounting on a right hand opening door so that it may be arranged on a left hand opening door and still provide for blocking of actuation from outside the door.

The primary object of the present invention, then, is to provide a latch assembly of such character that, by manipulation of means accessible from outside the case, the assembly may be adapted for mounting either on a right hand opening door or on a left hand opening door, and to provide for blocking latch actuation from outside of the door in either environment.

Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific construction illustrated and described, so long as the scope of the appended claims is not violated.

FIG. 1 is an elevation of a latch assembly constructed in accordance with the present invention, with the cover plate removed, parts being shown in section;

FIG. 2 is an exploded view of the knob detent and blocker mechanism embodying the present invention; and

FIG. 3 is a fragmentary elevation, partly in section, showing the same parts in assembled relation with the detent means in restraining engagement with one actuator cam and with the other cam in latch-retracting position.

Referring more particularly to the drawings, it will be seen that the reference numeral 10 indicates generally a latch case having a floor 11 and a boundary flange 12 upstanding from said floor and extending continuously around three sides of the case. A cover plate 13 is adapted to be assembled with said case to close the open face thereof, thereby defining a chamber which is open at the fourth side of the case. A face plate 14 is provided with inwardly projecting lugs 15 adapted to receive screws 16 passing through perforations in the flange 12, to close the open side of the case. Said face plate is formed with an opening 17 through which extends a reversible latch bolt head 18 carried by a stem 19 which is guided in a bracket 20 within said chamber, a spring 21 surrounding

said stem to urge said bolt head 18 resiliently toward projected position, as shown. A retractor 22 is mounted within the chamber upon a pivot 23 and is engageable with an abutment 24 fixed to the stem 19 to retract said stem 19 and head 18 against the tendency of the spring 21.

A first cam 25 is formed with a concentric, reduced hub 26 which is journalled in an opening 27 in the case floor 11, said cam being formed with a concentric, polygonal socket 28 adapted to receive a shank 29 which, in turn, may carry a latch actuating knob (not shown). A second cam 30 is similarly formed with a concentric, reduced hub 31 journalled in an opening 32 in the cover plate 13, and is similarly formed with a concentric, polygonal socket 33 adapted to receive a shank 34 which, in turn, carries a second actuating knob (not shown). The cam 25 is formed with a peripherally opening socket 35 providing abutment means, and the second cam 30 is provided with a similar socket 36, likewise providing abutment means.

A rocker 37 is mounted for oscillation about a fixed post 38 upstanding from the floor 11. As shown, and preferably, the rocker 37 comprises a first arm 39 formed with an intermediate aperture 40 which receives the post 38 and formed further with openings 41 and 42 therethrough, equally and oppositely spaced from the aperture 40. At its distal end, the arm 39 is formed to provide a rearwardly and inwardly turned finger 43 which, when the arm 39 is mounted on the post 38, is movable into and out of the socket 35.

The rocker 37 further comprises a second and identical arm 44 formed with an intermediate aperture 45 and with openings 46 and 47 equally and oppositely spaced from said aperture 45. The arm 44 is allochirally arranged relative to the arm 39, overlapping and overlying said arm 39 so that the arm 44 is positioned in the plane of the cam 30 and its rearwardly and inwardly turned finger 48 is positioned to enter the socket 36 of said cam 30. It will be seen that the parts are so proportioned and designed that, when the rocker 37 is in its median or neutral position relative to the post 38, the fingers 43 and 48 both clear the cams 25 and 30.

The face plate 14 is formed with an opening 49 in which is reciprocably received a plunger 50 formed at its proximal end to provide an eye 51 registrable with the opening 42 in the arm 39 and with the opening 46 in the arm 44; and a pivot pin 53 penetrates the openings 46 and 42 to enter the eye 51 and provide an operative pivotal connection between the plunger 50 and the rocker 37. At a point in its length, the plunger 50 is formed with an abutment shoulder 52.

The face plate 14 is formed with a second opening 54 in which is reciprocably guided a second plunger 55 having an eye (not shown) registrable with the openings 41 and 47; and a pivot pin 57 similarly penetrates the openings 41 and 47 and the eye of the plunger 55 to establish an operative pivotal connection between the plunger 55 and the rocker 37. The plunger 55 is provided with a shoulder 56 similar to the shoulder 52.

The arm 39 is formed with a series of notches 58, 59 and 60 and the arm 44 is formed with a similar series of registering notches 61, 62 and 63. Mounted upon a fixed post 64 is the eye 65 of a leaf spring 66 one arm 67 of which bears against an upstanding ear 68 lanced from the floor 11 and the other arm 69 of which is formed to provide a tang 70 cooperable with the several notches of the arms 39 and 44 yieldably to hold the rocker 37 in any one of three selected positions.

It will be seen that, if the plunger 55, which is accessible through the face plate 14, is pressed inwardly to the position of FIG. 3, the rocker 37 will be shifted from its neutral position of FIG. 1 to its position of FIG. 3 in which the finger 48 is engaged in the notch 36 to re-

strain the cam 30 against oscillatory movement about the axis of its hub 31. Thus, the registering notches 59 and 62 are moved out of engagement with the spring tang 70 which enters the registering notches 58 and 61. If, on the contrary, the plunger 50 is depressed, the finger 43 of the rocker 37 will be caused to enter the socket 35 of the cam 25, thus restraining the latter cam against oscillatory movement about the axis of its hub 26. At the same time, the registering notches 60 and 63 will be positioned to receive the spring tang 70.

From either of these extreme positions, one or the other of the plungers 50 and 55 may be partially depressed to return the rocker 37 to the position of FIG. 1 in which either cam 25 or 30 may be manipulated, by means of the shank 29 or the shank 34, to retract the latch bolt head 18.

The post 38 is so proportioned and designed as to extend above the upper surface of the arm 44; and a blocker arm 71 is formed adjacent one end with an aperture 72 receiving the upper end of the post 38, whereby said arm 71 is pivotally mounted within the case chamber. At its distal end, said arm 71 is formed to provide a radiused, downturned flange 73; and the parts are so proportioned and designed that, when the blocker arm 71 is in the position illustrated, its flange 73 will be located in the path of the shoulder 52, whereby the plunger 50 is blocked against sufficient depression to engage the finger 43 in the socket 35. When, on the contrary, the arm 71 is turned in a counter-clockwise direction to a corresponding position, its flange 73 will be located in the path of the shoulder 56 of the plunger 55 to block said plunger against depression to a sufficient degree to engage the finger 48 in the socket 36 of the cam 30. As shown, and preferably, the arm 71 is so designed that it may assume an intermediate position in which either of the plungers may be depressed sufficiently to engage the corresponding rocker finger in its associated cam socket.

Adjacent its distal end, the arm 71 is formed with an internally threaded aperture 74 for the reception of a screw 75 which extends outwardly through an arcuate slot 76 formed in the cover plate 13, where it is accessible from outside the latch case. Preferably, the screw 75 is of such length that it may be turned down sufficiently so that its head frictionally engages the external surface of the cover plate 13 to lock the arm 71 in adjusted position.

When the shank 29 is to carry the outside door knob, the screw 75 will be loosened and its head will be manipulated to swing the arm 71 into position to block the plunger 55, after which the screw will again be tightened. Thus, the plunger 50 can be depressed to engage the finger 43 in the socket 35 to restrain the cam 25 against oscillation. If, on the contrary, the shank 34 is to carry the outside knob, then the arm 71 will be shifted to its illustrated position in which the plunger 50 cannot be so depressed but the plunger 55 can be depressed to engage the finger 48 in the socket 36 to restrain the cam 30 against actuation by the shank 34.

I claim as my invention:

1. In a device of the class described, a latch case having a boundary flange open at one side, a cover plate cooperable with said flange to define a chamber, a face plate, means securing said face plate to said case to close said side, said face plate being formed with an opening therethrough, a latch bolt reciprocably mounted in said chamber and having a head projectable through said face plate opening, retractor means movably mounted in said chamber and cooperable with said latch bolt to retract the same, a first cam mounted in said chamber for oscillation about a fixed axis and cooperable with said retractor to actuate the same, said first cam being provided with abutment means, a second cam mounted in said chamber for oscillation about said fixed axis and cooperable with said retractor to actuate the same, said second cam being provided with abutment means, detent means mounted in said chamber for movement relative to said cams and engageable alternatively with said abutment means of said respective cams to restrain the engaged cam against oscillatory movement, means accessible through said face plate for manually shifting said detent means into engagement alternatively with either of said abutment means, and means mounted in said chamber but accessible from outside said chamber and movable selectively into position to block engagement of said detent means with one or the other of said abutment means.

2. The device of claim 1 in which said detent means is a rocker mounted in said chamber for oscillation about a second axis parallel with said fixed axis, said rocker extending oppositely from said second axis and providing fingers oppositely spaced from said second axis, one of said fingers being engageable with the abutment means of said first cam when said rocker is turned in one direction from a neutral position and the other of said fingers being engageable with the abutment means of said second cam when said rocker is turned in the opposite direction from such neutral position.

3. The device of claim 2 in which said means for manually shifting said detent means comprises a first plunger penetrating said face plate and operatively engaging said rocker at a point spaced in one direction from said second axis, and a second plunger penetrating said face plate and operatively engaging said rocker at a point spaced in the opposite direction from said second axis.

4. The device of claim 3 in which said selectively movable means is alternatively positionable in said chamber in blocking relation to said respective plungers.

5. The device of claim 3 in which said selectively movable means is an arm mounted to oscillate about said second axis and extending therefrom generally toward said face plate, each plunger being provided with a shoulder facing said rocker and said arm being positionable alternatively in the paths of said shoulders.

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