

[54] **LATCH MECHANISM FOR DOORS**

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[58] Field of Search 70/149, 150, 152

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[57] **ABSTRACT**

A latch mechanism having a latch bolt divided into two portions one of which carries the bolt head, the two portions being individually spring-biased towards the locking position and moved by means of a key-responsive means which is mounted between the latch tube and the bolt head and co-operates with a coupling member which is adapted to hold the head in locked position and to interconnect the two bolt portions. By this construction the bolt can be moved by means of a key, also when the door handle is turned downwardly and the lock is blocked. A turning movement of the key for locking purposes will invariably lock the door, even if the bolt head is in an intermediate position. The latch is readily suitable for left-hinged and right-hinged doors.

2 Claims, 2 Drawing Figures

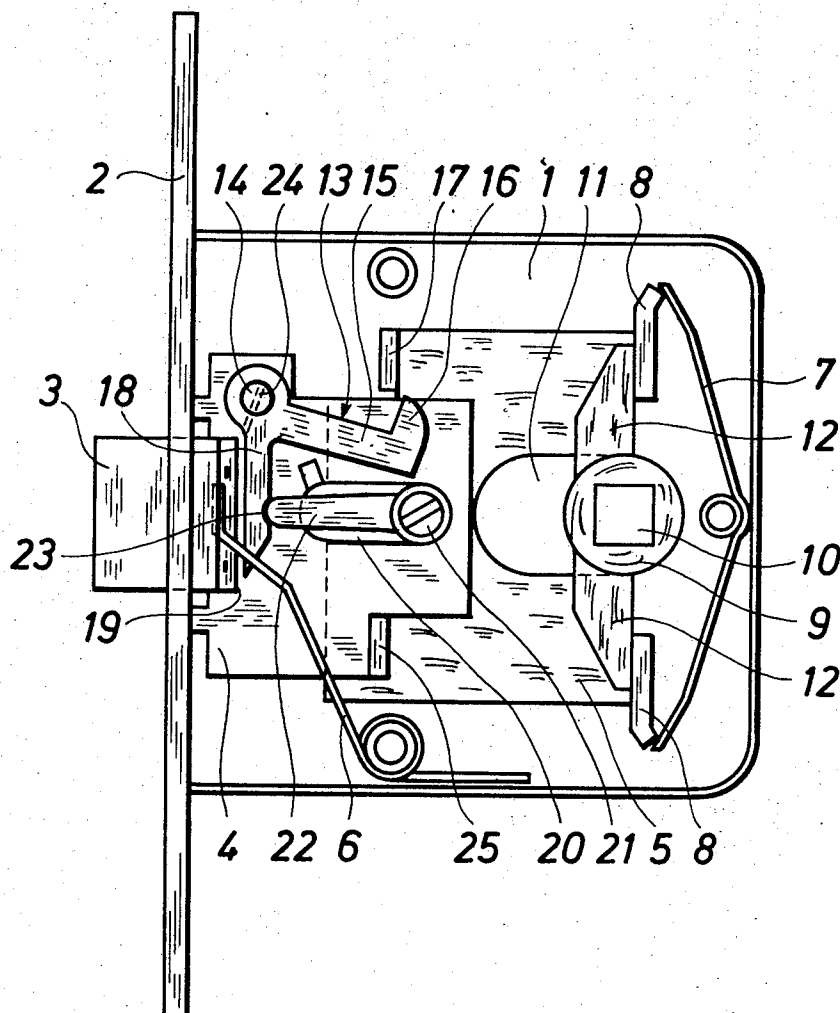


Fig. 1

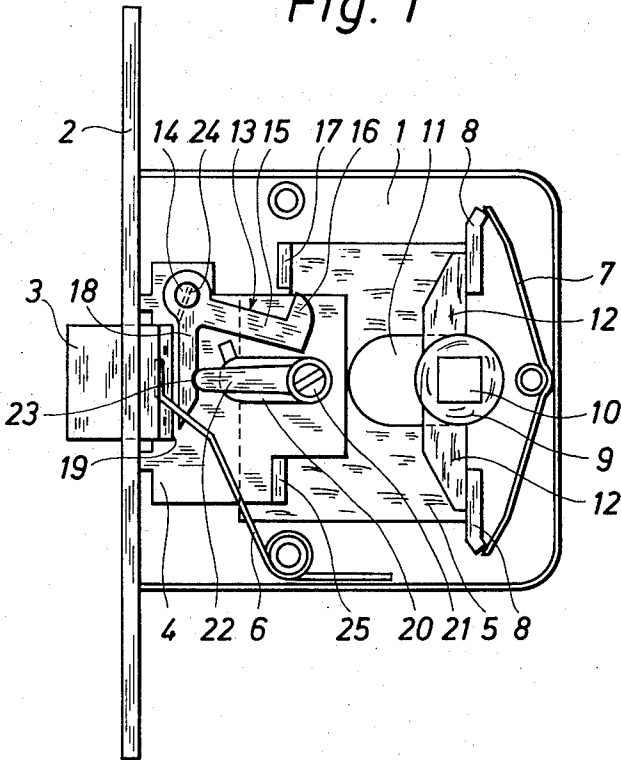
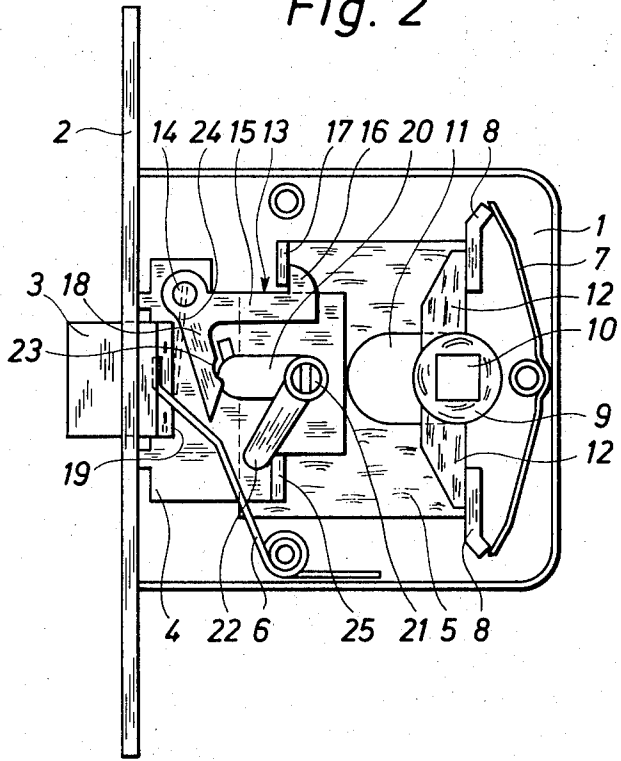


Fig. 2



LATCH MECHANISM FOR DOORS

The present invention relates to a latch mechanism for doors and of the type comprising a latch bolt provided with a head and slidably mounted within a latch case formed with an opening in its face plate, and a latch tube pivotally mounted in said latch case and having an opening therethrough to accommodate a door handle, and means for actuating the latch bolt in such a manner that a turning movement of the latch tube will allow said latch bolt to be moved away from the face plate against the action of a projecting spring, and a key-responsive means adapted upon a turning movement of the key to be moved into a position where it will block the latch bolt in the projecting locked position of the bolt head and to move the latch bolt back into the retracted position of the bolt head independent of the latch tube.

Such a latch mechanism is able to operate in such a manner that it will meet the following three requirements:

1 In addition to using the door handle, the bolt head may be moved from the projecting position into its retracted position by means of the key.

2 The movement described in 1) is possible also with the door handle turned downwardly, even when the lock is blocked.

3 A turning movement of the key for locking purposes will invariably lock the door, even if the bolt head assumes an intermediate position.

The known latch mechanism of this type suffers from the disadvantage that it is not readily suitable for left-hinged and right-hinged doors. It is desirable, however, that a door latch of the subject type should be suitable for both types of door as this will result in substantial savings in costs both in manufacturing and storing doors, and also planning is facilitated due to the fact that only one type of door is available.

It is the object of the present invention to provide a latch mechanism of the subject type adapted to be readily used for left-hinged and right-hinged doors.

This object is achieved by the latch bolt being divided into two members, one of which carries the bolt head, said members being individually spring-biased towards the locking position and releasably interconnected by means of a pivotal spring-biased coupling member, and by the latch tube being adapted to move the headless bolt member away from the face plate upon a turning movement in both directions, and by the pivot of the key-responsive means being located between the latch tube and the face plate and having an actuating means adapted to engage with the coupling member to move it from a position in which it interconnects the two bolt members to a position in which said two bolt members are disengaged from each other, and where the bolt member carrying the bolt head is retained in locked position, said key-responsive means being also adapted to engage a shoulder formed on the bolt member carrying the head to move said member away from the locked position independent of the second bolt member.

In the case of this structure the latch mechanism is fully symmetrical about the central axis or pivotal axis of the latch bolt, and both the keyhole and the opening for the door handle are located on this centre line with the effect that the only possible thing to be attended to when changing from a right-hinged to a left-hinged

door, or vice versa, is turning the door handle 180° in the latch tube.

The invention will be further explained in the following with reference to the drawing, in which

FIG. 1 illustrates the latch mechanism viewed from the side, and

FIG. 2 is the same with the latch in unlocked but closed position.

The latch mechanism comprises a latch case 1 with a face plate 2 having an opening in which is mounted a bolt head 3 on a bolt member 4 which is slidably mounted in the latch case. One bolt member 4 is actuated by a projecting spring 6, one arm of which actuates a shoulder on the bolt head 3, and the second bolt member 5 is actuated by a projecting spring 7 with two arms which actuate some projections 8 on the bolt member 5.

A latch tube 9 having an opening 10 therethrough for a door handle is pivotally mounted in the latch case 1, and said latch tube is mounted in a notch 11 provided in the bolt member 5 such that the latter is movable to the right in the figures. The latch tube 9 has two arms 12 which are aligned and adapted to engage the projections 8 on the bolt member 5.

The two bolt members 4 and 5 are interconnectable by means of a coupling member 13 formed as a two-armed lever mounted on a pin 14 of the bolt member 4. One of the levers 15 is formed with a hook 16 adapted to engage a projection 17 on the bolt member 5. The second arm 18 of the lever is adapted to abut a shoulder 19 on the bolt head 3 as has been shown in FIG. 1.

In a notch 20 in the bolt member 4 there is mounted in the latch case 1 a means 21 responsive to a not shown key and having an arm 22 adapted to engage a recess 23 formed in the arm 18.

The coupling member 13 is actuated by a spring 24 seeking to turn said coupling member 13 anti-clockwise about the pin 14.

The bolt member 4 is provided with a projection 25 which is so disposed as to be actuated by the arm 22 when the latter is swung anti-clockwise into the position shown in FIG. 2.

Opposite the pivotal axis of the means 21, keyholes are provided in the latch case 1 for insertion of the key to engage the means 21.

The operation of the latch mechanism is as follows: The position of the latch shown in FIG. 2 represents its ordinary operative position, i.e., unlocked, and the bolt head 3 is movable to the right from the closed position shown into a retracted position upon a turning movement of the latch tube by means of the not shown door handle. This turning movement will cause the upper arm 12 to be urged against the projection 8 to move the bolt member 5 to the right against the action of the projecting spring 7. The bolt member 5 is coupled with the bolt member 4 by means of the coupling member 13, and in this manner the bolt head 3 will be withdrawn into the latch case. This movement may be performed by turning the latch tube 9 in either direction, to thereby enable the latch to be turned upside down without difficulty.

From the closed position shown in FIG. 2 the latch may also be opened by means of the key as a turning movement of the means 21 and the arm 22 will cause the arm to be urged against the projection 25 on the bolt member 4 such that the latter and the bolt head 3

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will be moved to the right against the action of the projecting spring 6.

The latch is locked by the means 21 and the arm 22 being turned clockwise from the position shown in FIG. 2 into that shown in FIG. 1, whereby the arm 22 is moved into engagement with the arm 18 and will turn the coupling member 13 clockwise to release the hook-shaped portion 16 from engagement with the projection 17 on the bolt member 5. The latch tube 9 is freely pivotable in this locked position. As soon as the means 21 and the arm 22 are turned by the key from the position shown in FIG. 1 to that shown in FIG. 2, the spring 24 will move the coupling member 13 back to the position according to FIG. 2 in which the two bolt members 4 and 5 are coupled together. The upper surface of the hook-shaped portion 16 is formed so that said hook-shaped portion cannot reach up in front of the projection 17 and thereby prevent the retracting movement thereof.

It will be readily seen from FIG. 1 that the latch may also be unlocked even if the door handle is turned downwardly as this will not change the mode of operation of the key-responsive means 21 and the arm 22.

If for some reason or other the bolt head 3 assumes an intermediate position when the door is closed, a turning movement of the key will lock the door unlike many known latch mechanisms of the subject type.

I claim:

1. A latch mechanism for doors and of the type comprising a latch bolt provided with a head and slidably mounted in a latch case formed with an opening in its face plate, and a latch tube pivotally mounted in said latch case and having an opening therethrough to accommodate a door handle, and means for actuating the latch bolt in such a manner that a turning movement of the latch tube will allow said latch bolt to be moved away from the face plate against the action of a projecting spring, and a key-responsive means adapted upon a turning movement of the key to be moved into a position where it will block the latch bolt in the projecting locked position of the bolt head and to move the latch

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bolt back into the retracted position of the bolt head independent of the latch tube, characterized in that the latch bolt is divided into two members, one of which carries the bolt head, which members are individually spring-biased towards the locking position and releasably interconnected by means of a pivotal, spring-biased coupling member, where said latch tube is adapted to move the headless bolt member away from the post upon a turning movement in either direction, the pivot of said key-responsive means being located between the latch tube and the face plate and includes an actuating means adapted to engage with the coupling member to move it from a position in which it interconnects the two bolt members to a position in which said two bolt members are disengaged from each other, and where the bolt member carrying the bolt head is retained in the locked position, said key-responsive means being further adapted to engage a shoulder formed on the bolt member carrying the bolt head to move said member away from the locked position independent of the second bolt member.

2. A latch mechanism according to claim 1, characterized in that the pivot of the latch tube and that of the key-responsive means are rectilinear and coincide with the central and pivotal axis of the latch bolt, and that the latch tube has two arms which engage two projections formed on the headless bolt member, where the coupling member is composed of an angular lever mounted on the bolt member carrying the bolt head, one arm of which lever is formed as a hook adapted to engage a projection on the headless bolt member, the second arm of said lever being formed so as to abut a shoulder provided on the bolt member carrying the bolt head and be urged thereagainst by an arm provided on the key-responsive means which is disposed in a notch formed in the bolt member carrying the bolt head, said arm being further adapted upon movement away from the locking position to engage a projection provided on the bolt member carrying the bolt head.

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