March 21, 1933. W. A. ENDTER 1,902,547

ROTARY BOLT DOORLOCK

Filed March 15, 1932

Fig. 1.

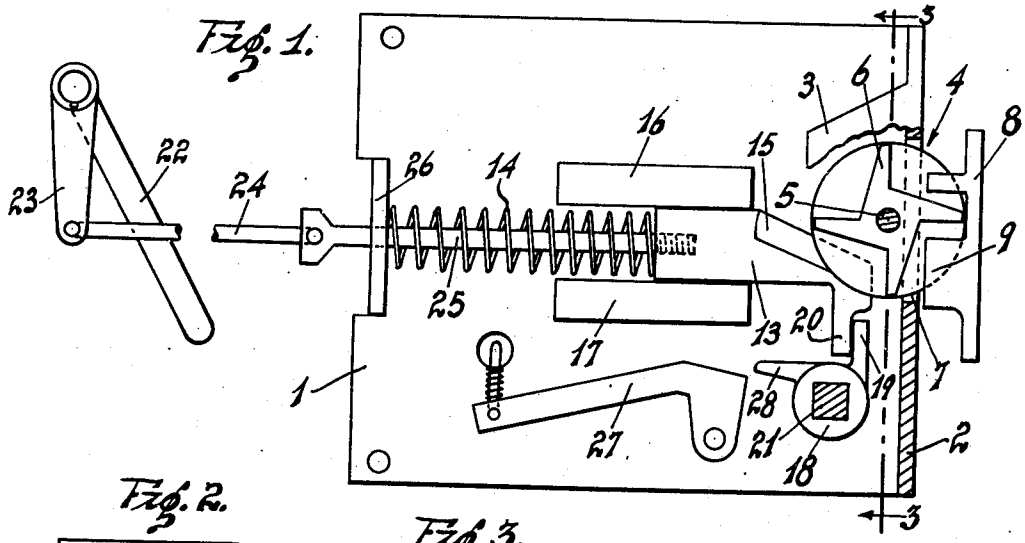


Fig. 2.

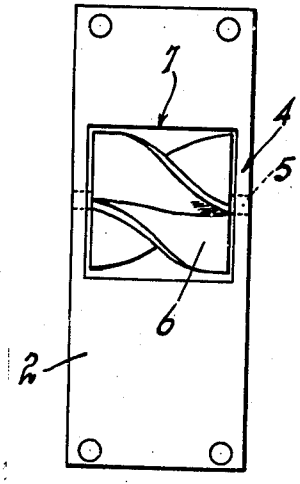


Fig. 3.

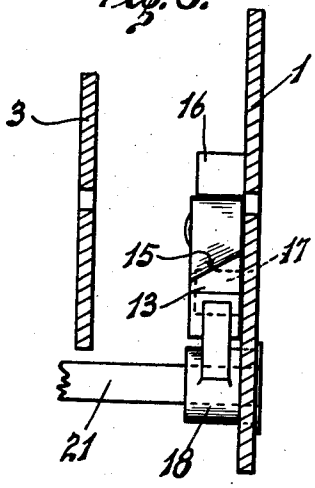


Fig. 4.

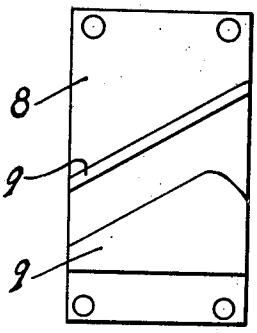


Fig. 5.

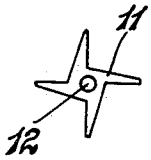


Fig. 6.

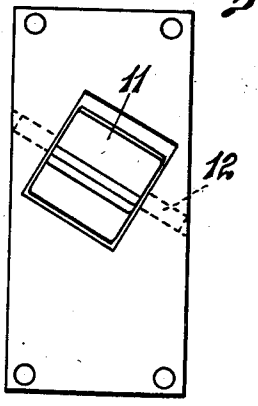
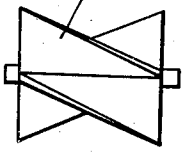


Fig. 7.



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ROTARY BOLT DOORLOCK

Application filed March 15, 1932. Serial No. 598,960.

Certain types of doors, particularly those in automobiles, have a horizontal movement as well as a vertical movement imparted to them due to the inequalities of the road or the like. This causes a rattle which heretofore has been difficult to remedy.

This invention relates to a rotary bolt door lock, the rotating member of which has inclined or screw-like blades formed thereon which blades engage inclined surfaces on the strike plate.

An object of my invention is to provide a lock of the character stated which will effectively eliminate both horizontal and vertical movement in a door.

Another object is to provide a novel and simple means to prevent backward rotation of the rotating bolt or winged rotor so that the wings or blades will be held tightly pressed against the strike plate.

A further object is to provide a novel bolt for a door which will engage with little effort and without slamming the door.

A feature of my invention resides in the ease with which the rotary bolt enters the strike plate contacting this plate in such a way as to prevent both horizontal and vertical movement of the door.

Still another object of my invention resides in the novel means whereby the dog which engages the rotary bolt is held against retraction or from being forced away from the rotary bolt by pressure on the door.

I have shown the preferred embodiment of my invention, but it is to be understood that other forms might be devised and are here included within the scope of the claims.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing

Figure 1 is a side elevation of my lock with one wall broken away to show interior construction.

Figure 2 is an end view of the lock.

Figure 3 is a sectional view taken on line 3—3 of Figure 1 and with the bolt removed.

Figure 4 is a face view of the strike plate.

Figure 5 is an end view of a straight blade rotor.

Figure 6 is an end view of the bolt shown in Figure 5 mounted in a lock.

Figure 7 is a side elevation of still another type of bolt.

Referring more particularly to the drawing, the numeral 1 indicates the frame plate of the lock which includes a face 2 and a side web 3. A rotary bolt 4 is journaled between the parts 1 and 3 on a shaft or trunnions 5. The bolt is formed with a plurality of heads or blades 6 and these blades may be spiral or thread-like as shown in Figures 1 and 2, that is, a plane running through both ends of the blade would be at an angle to the axis of rotation of the bolt. The bolt partially projects through an opening 7 in the face blade 2. The blades of the bolt enter a strike plate 8 which is secured to the door frame. The strike plate has a plurality of inclined lugs 9—9 extending transversely across the face thereof.

The heads or blades of the bolt are adapted to fit against the lugs 9—9 and when the bolt is prevented from rotating it will hold the door from opening. Also if the heads or blades of the bolt are urged against the strike plate and at the same time is held against any retraction, the door will be prevented from rattling both horizontally and vertically. As shown in Figures 1 and 2, the blades of the bolt are spiral or screw-like, while in Figure 7, I have shown a bolt with straight blades 10. The bolt preferably moves around a horizontal axis although the angle may vary from horizontal to vertical. As shown in Figures 5 and 6, the bolt 11 is of the straight blade type, and the axle 12 about which it rotates is positioned at an angle to the horizontal or vertical, substantially as shown in Figure 6. It will be evident that in this arrangement also, the bolt contacts inclined groove-ways or lugs in a strike plate and will therefore hold the door from rattling both horizontally and vertically.

The bolts of any type shown or suggested are urged in a clockwise direction by means of a sliding dog 13 which is yieldably

pressed against the bolt by a spring 14. The dog is provided with an inclined face 15 which bears against the heads of the bolt, and thus the head which is in engagement with the strike plate will be pressed against the inclined lugs in such a manner as to prevent rattling of the door. Any movement of the door inwardly or upwardly will be immediately taken up by reason of the spring pressure against the dog 13, constantly urging the dog into contact with the bolt and urging the bolt in a clockwise latching direction. The dog 13 is slidably mounted between stationary guides 16 and 17. The outer end of the dog overhangs the end of the guides as shown in Figure 1, and any downward pressure on the outer end of the dog, by reason of a counter clockwise force exerted on the bolt, will tend to bind the dog between the guides, and the dog is thus prevented from slipping back, that is, if an attempt is made to force the door open the bolt would be urged in a counter clockwise direction thus pressing down on the end of the dog, and due to its cantilever mounting it would bind between the guides and would therefore not retract.

To open the door with the outside handle the following structure is provided. A cam 18 is rotatably mounted in the frame plate 1, and this cam is provided with a lug 19 which engages a depending lug 20 on the dog 13. The rod 21 from the outside handle extends into the cam 18 to rotate said cam and lug 19 in order to slide the dog 13 back, which permits free rotation of the bolt 4, the door is then opened.

For automobiles and the like, an inside handle 22 is provided which is connected through an arm 23 to a link 24, which link is suitably attached to a post 25 extending rearwardly from the dog 13. The spring 14 preferably surrounds the post 25, and the rear end of said spring bears against a plate 26 through which said post extends. The cam 18 is locked by means of a lever 27 which is pivotally mounted on the plate 1 and is adapted to be manually moved under a lug 28 on the cam 18. A locking dog, of the type previously described, may also be used in connection with the bolts shown in Figures 5, 6 and 7.

Having described my invention, I claim:

1. In a latch construction, a rotary bolt capable of free rotation in all positions when released, including a plurality of heads, any one of which is adapted to engage a keeper, a movable dog adapted to engage successive heads of the bolt in non-latching position, cooperating means between the bolt and the dog imposing a continued rotation of the bolt in latching direction when one of the heads is in keeper engaging position and concurrently imposing a multi-directional wedging action.

2. In a latch construction, for a closure, a bolt rockably mounted on the closure, a sliding and rockable dog adapted to engage the bolt and restrain movement thereof in one direction, guide means for the dog, the outer end of the dog overhanging the end of the guide means, said dog being adapted to rock and bind in the guide means when force is applied to the overhanging end of the dog by the movement of the bolt in one direction.

3. In a latch construction for a closure, a rotary bolt capable of free rotation in all positions when released, including a plurality of radially disposed heads, each head having a bevelled face, any one of the heads being adapted to engage a keeper, a sliding dog, guide means therefor, the outer end of the dog extending beyond the end of the guide means and being bevelled, said dog being adapted to engage the successive heads of the bolt to impose a continued rotation of the bolt in a latching direction when one of the heads is in keeper engaging position and causing a multi-directional wedging action to occur, the bolt engaging the outer end of the dog to impose a lateral thrust upon the latter for effecting binding of the dog in its guide means.

4. In a latch construction, a rotary bolt capable of free rotation in all positions when released, including a plurality of heads any one of which is adapted to engage a keeper, a dog adapted to engage successive heads of the bolt in non-latching position, the heads of the bolt having bevelled faces, the dog having a bevelled face for cooperation with the bevelled faces of the heads of the bolt whereby a multi-directional wedging action occurs, thereby imposing a continued rotation of the bolt in a latching direction when one of the heads is in keeper engaging position.

5. In a latch construction for a closure, a rotary bolt mounted on a vertical axis and capable of free rotation in all positions when released, including a plurality of radially disposed heads, each head being disposed at an acute angle to the axis of rotation of the bolt, any one of the heads being adapted to engage a keeper, and means engageable with any one of the heads, said means including means for imposing a continued rotation of the bolt in a latching direction when the bolt is in keeper engaging position, the imposing means thereby cooperating with the keeper engaged acute angled head to impose a thrust on the closure in another direction than that imposed by the latching of the bolt.

6. In a latch construction for a closure, a rotary bolt capable of free rotation in all positions when released, including a plurality of heads, any one of which is adapted

to engage a keeper, sliding dog adapted to engage successive heads of the bolt in non-latching position, said dog including means for imposing a continued rotation of the bolt in a latching direction when one of the heads is in keeper engaging position, guide means for the sliding dog, the dog being capable of rockable movement in said guide means, the outer end of the dog overhanging the end of the guide means, said dog being adapted to rock and bind in the guide means when force is applied to the overhanging end of the dog by the movement of the bolt in a reverse direction.

7. In a latch construction, a rotary bolt capable of free rotation in all positions when released, including a plurality of spiral heads extending radially, any one of which is adapted to engage a keeper, a sliding dog adapted to engage the successive heads of the bolt and restrain movement thereof in one direction, guide means for the sliding dog, the outer end of the dog overhanging the end of the guide means and being bevelled, said bevelled end of the dog imposing a continued rotation of the bolt in a latching direction when one of the heads is in keeper engaging position and the bevelled end of the dog is in engagement with another of said heads, the bevelled heads cooperating with the bevelled end of the dog to impose a lateral thrust on the bevelled end of the dog and cause the same to bind in its guide means.

8. In a latch construction, a rotary bolt capable of free rotation in all positions when released, including a plurality of heads, any one of which is adapted to engage a keeper, a sliding dog adapted to engage successive heads of the bolt in non-latching position, said dog having means for imposing a continued rotation of the bolt in a latching direction when one of the heads is in keeper engaging position, the heads of the bolt having bevelled faces, the outer end of the dog overhanging the end of the guide means and having bevelled faces for cooperation with the bevelled faces of the heads of the bolt whereby a multi-directional wedging action occurs, the dog being capable of rocking in the guide means to bind the dog when force is applied to the overhanging end of the dog by the movement of the bolt in one direction.

In testimony whereof, I affix my signature.

WALDEMAR A. ENDTER.