

Jan. 2, 1923.

R. G. MOORE.
LATCH FOR DOORS.
FILED Nov. 30, 1921.

1,440,884

2 SHEETS-SHEET 1

Fig. 1,

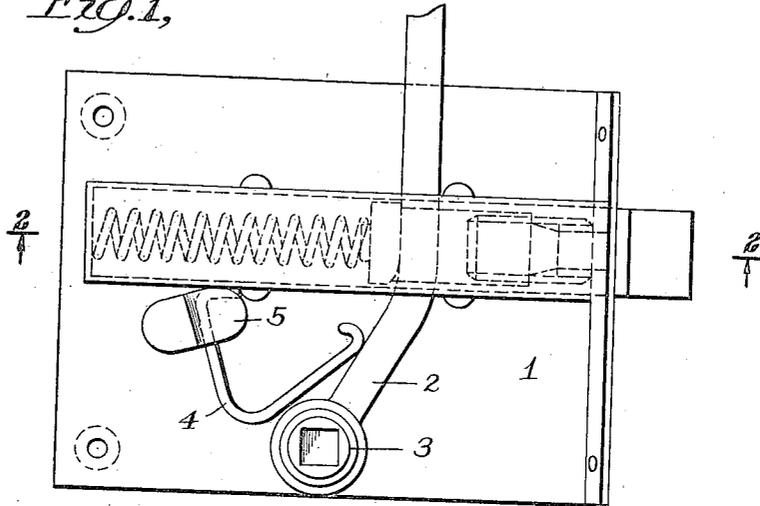


Fig. 2,

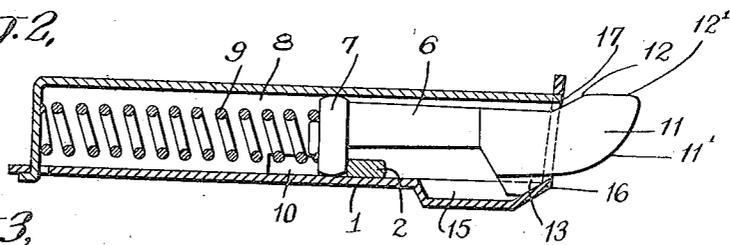


Fig. 3,

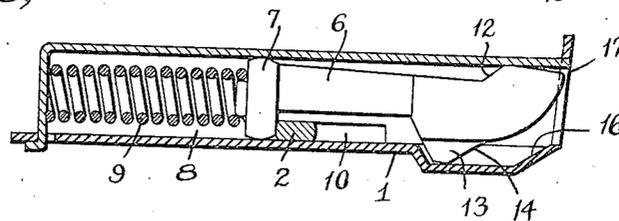
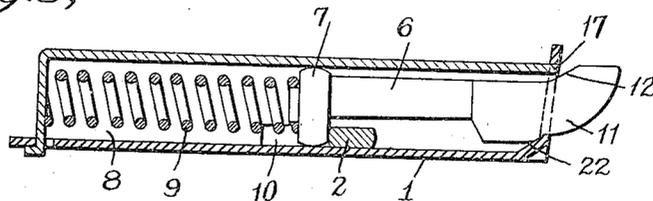


Fig. 8,



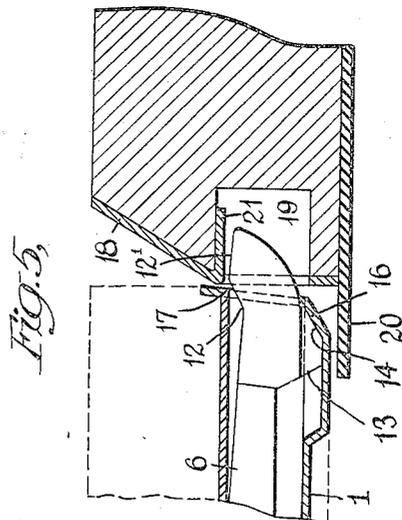
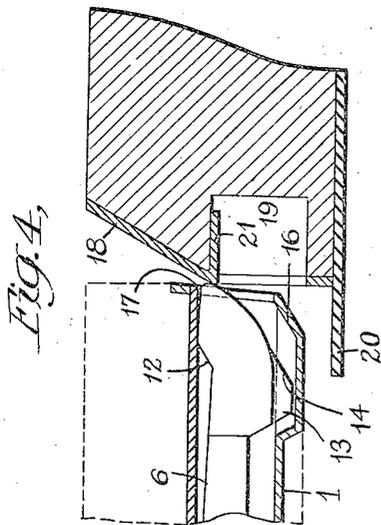
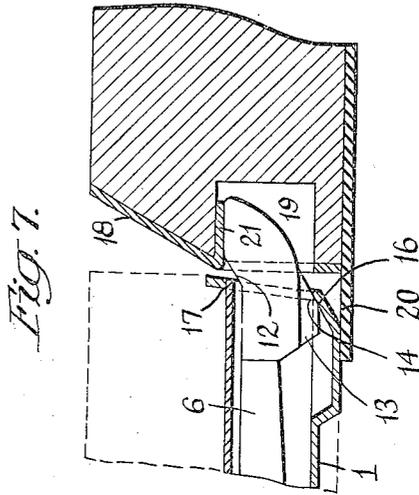
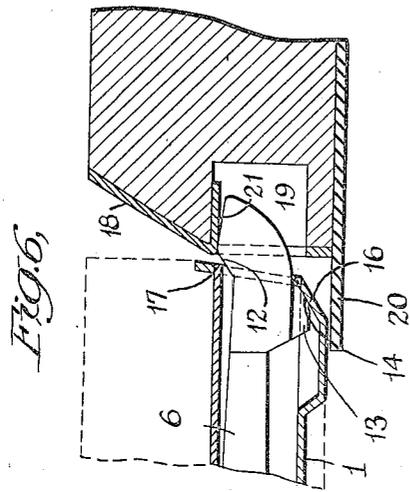
INVENTOR
Raymond G. Moore
BY *Dyer Smith*
his ATTORNEY

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UNITED STATES PATENT OFFICE.

RAYMOND G. MOORE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE BASSICK COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LATCH FOR DOORS.

Application filed November 30, 1921. Serial No. 518,770.

To all whom it may concern:

Be it known that I, RAYMOND G. MOORE, a citizen of the United States, and resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Latches for Doors, of which the following is a specification.

This invention relates to certain new and useful improvements in latches for doors. The primary object of the invention is to provide a simple and effective construction whereby the operation of the bolt tends to force the door firmly against its seat so as to prevent rattling.

The improved latching or fastening device is particularly adapted for use as an automobile door latch in which the "weaving" of the automobile in operation strongly tends to cause rattling of the door. It should be understood, however, that the invention is not limited to such use but that the same may be used to advantage in connection with such doors as refrigerator doors in which it is particularly desirable to have a tight closure and to doors generally such for example as the doors of buildings in which the wind is likely to cause rattling.

I accomplish the desired purpose in my new construction by the use of a sliding bolt so mounted and guided that the movement of its outer end will be deflected, as the bolt is projected, the bolt preferably riding over a cam surface so as to deflect its outer end against a lateral surface of the keeper in such manner as to cause the bolt to press the door firmly against its seat.

Other objects of the invention consist in the provision of improved combinations of parts and construction of elements, all as will appear more fully hereinafter in the following specification and be particularly pointed out in the appended claims.

In order that a clearer understanding of the invention may be had attention is hereby directed to the accompanying drawings forming part of this application and illustrating by way of example one form of the invention. In the drawings

Fig. 1 is a side elevation of a latch construction embodying the invention;

Fig. 2 is a horizontal sectional view taken

on line 2—2 of Fig. 1 showing the latch bolt fully projected;

Fig. 3 is a similar view in which the bolt is shown as being fully retracted;

Fig. 4 illustrates the bolt as having passed over the striker on the closing of the door, and having been completely backed into its casing thereby;

Fig. 5 is a similar view showing the bolt entering the striker recess prior to taking a deflected course;

Fig. 6 is a similar view showing the bolt after the latter has been deflected and just as it engages with an interior surface of the striker recess;

Fig. 7 is a similar view showing the bolt fully projected to firmly seat the door against its seat on the door jamb, and

Fig. 8 is a view similar to that shown in Fig. 2 illustrating a modified form of construction.

Referring to the drawings, I have illustrated the bolt as mounted within a usual form of bolt chamber, it being understood that such construction is not essential but only that some suitable form of guiding means for the bolt be used. The latch casing or plate 1 is shown as provided with the operating hand lever 2 pivoted to plate 1 by means of hub 3 which may be provided with a square opening to receive the shank of an operating handle or knob (not shown). Lever 2 is shown as urged forward by means of a spring 4 which bears thereon, this spring being secured to the casing in any convenient manner as by means of the struck-up tongue 5 bent over the spring to clamp the same thereto.

The bolt 6 is illustrated as provided at its inner end with an enlargement 7 which slidably and rockably fits within the bolt chamber 8, it being noted that this construction is advantageous but that the invention is not limited, in some of its aspects, thereto. A suitable spring is positioned to constantly urge the bolt forward to its operative position, such a spring being the coiled spring 9 which is positioned between the rear end of the bolt and the rear wall of the bolt chamber 8.

In the construction illustrated the operating hand lever 2 projects through the bolt chamber, and through slots 10 in the casing, lever 2 being positioned in front of the

enlargement or collar 7 on the bolt and being adapted when operated to retract a bolt against the pressure of spring 9.

The outer end of the bolt is provided with a beveled nose 11 which is adapted to ride over the front surface of the striker or keeper 18 on the door jamb, when the door is closed. The nose of the bolt is provided with a surface, illustrated at 12¹ on the side opposite to the beveled or curved surface 11¹, which is adapted to press against an interior surface of the striker recess when the bolt is projected, or, more generally speaking, to press against a lateral surface of the striker. An inclined face 12 is also illustrated as extending rearwardly from the rear edge of the surface 12¹.

The outer end of the bolt is also provided with a projection 13 extending rearwardly from the beveled or curved surface 11¹, on the side of the bolt opposite to that on which the surface 12 is formed, projection 13 being shown as provided with an inclined front face 14.

Projection 13 is adapted to slidably engage a surface or run-way in the bolt chamber, an elongated recess or run-way 15 adapted for this purpose being illustrated in Figs. 2 and 3 of the drawings. The forward edge of the run-way or casing is provided with an inclined wall 16 on which the face 14 of the bolt is adapted to ride when the bolt is projected. Consequently as the bolt moves forwardly it is given a lateral deflection as the face 14 of projection 13 comes into engagement with and rides on the inclined surface 16.

I have illustrated the invention as applied to the door of an automobile and have indicated the door jamb as provided with a striker or keeper 18 having a bolt receiving recess 19 and a contact plate 20 against which the door will seat when closed. When the head of the bolt enters recess 19 the inclined face 14 of the bolt will ride up the inclined surface 16 of the casing so that it will be deflected laterally from the position shown in Fig. 5 to that shown in Fig. 6 in which the surface 12¹ of the nose of the bolt engages against the bearing plate 21 which forms a continuation of the main striker plate. In the continued projecting movement of the bolt, under the pressure of spring 9, face 12¹ of the bolt will move inwardly somewhat along the bearing plate 21, this resulting in pressure being exerted by projection 13 against surface 16 of the casing to force the door firmly against its seat 20.

It will thus be seen that the door is held firmly against its seat so as to prevent rattling thereof during conditions of operation, face 12¹ of the bolt bearing firmly against plate 21 and surface 14 bearing firmly against surface 16 of the casing. It will also

be noted that the parts are held in this position by spring 9 which is strong enough to hold the bolt in projected position and prevent rattling of the door under usual conditions of operation. In case considerable pressure is exerted laterally by the door jamb against the bolt, however, as in the operation of an automobile, when the weaving of the car may cause considerable pressure to be exerted by the plate 21 against the face 12¹ of the bolt, a greater amount of stress or strain might be imparted to the bolt and casing than is desirable. Such a strain is relieved, however, in the construction illustrated because in such a case the excessive pressure imparted to the face 12¹ of the bolt would result in a certain amount of sliding of the surface 14 down the inclined face 16 of the casing, causing the bolt to back to a sufficient extent into its chamber so as to relieve the strain, it being noted that the surface 16 should be given a sufficient angle to make this action possible.

When the bolt is to be retracted into its casing, as by the operation of hand lever 2, inclined surface 12 of the bolt will coact with the adjacent edge 17 of the bolt chamber to aid in returning the bolt to its retracted position.

In the drawings the normal inoperative position of the parts is illustrated in Figure 4 while in Figs. 5 and 6 is shown the position of the parts during the projection of the bolt, Fig. 7 showing the parts when the bolt has been fully projected. When the door is thus fully projected rattling of the door will be prevented by the engagement of the bolt with surface 21 on one side while the lug 13 has cammed or pressed the bolt casing in the opposite direction so that the door to which the casing is secured will be firmly pressed against the seat 20.

It will be noted that the construction described is such that the door may be opened and closed very easily, a slight movement of the hand lever 2 to open the door being sufficient to relieve the pressure between the parts and permit the ready retraction of the bolt. In the construction illustrated the inner end of the bolt, illustrated as the collar or enlargement 7, fits within the bolt chamber sufficiently tightly to prevent any loose or wobbly motion of the bolt, the rounded surface of the portion 7 of the bolt making for smoothness of operation during the sliding and the rocking motion of the bolt. This construction, however, while desirable is not as stated above essential to the invention.

In the modified construction illustrated in Fig. 8 the depressed run-way 15 is eliminated, a cam wall 22 being shown as formed on the adjacent edge of the casing to coact with an inclined surface at the rear edge of the beveled portion of the bolt.

The present application comprises in large part a continuation of my application Serial No. 436,936, lock for doors, filed January 13, 1921.

5 It will be noted that the outer end of the bolt is deflected laterally by the cam or inclined surface 16, as described, during the last part of the projecting movement of the bolt, this lateral movement preferably taking
10 place during less than the last half of the projecting movement.

It should be understood that the invention is not limited strictly to the details of construction described but is as broad as is
15 indicated by the accompanying claims.

What I claim is:—

1. In a door latch, the combination of a plate having a bolt guiding means thereon, a single latching bolt adapted to firmly latch
20 the door, mounted on said plate for sliding and rocking movement and guided by said means, hand operated means adapted to retract the bolt, spring means constantly tending to press the bolt into projected position,
25 and cam means for deflecting the outer end of the bolt laterally, during the last half only of the projecting movement thereof, to insure a firm seating of the door when the bolt has been thus deflected against a lateral surface of the keeper.

2. In a door latch, the combination of a plate having bolt guiding means thereon, a bolt mounted on said plate for sliding movement and guided by said means, said bolt
35 having a bearing portion adjacent its forward end and said plate having an inclined surface adapted to coact with said bearing portion to move the outer end of the bolt laterally, during projecting movement thereof,
40 into engagement with a lateral surface of the keeper, to insure a firm seating of the door, and means for resiliently holding the bolt in projected position, with said bearing portion of the bolt bearing on said inclined
45 surface of the plate, said coacting surfaces on the bolt and plate being constructed to permit sufficient rearward movement of the bolt from its projected position to relieve strain in case of pressure exerted laterally
50 by the door or jamb against the bolt.

3. In a door latch, the combination of a striker having a lateral bearing surface, a door jamb abutment against which the door seats when closed, a plate on the door having
55 bolt guiding means thereon, a bolt mounted on said plate for sliding movement and guided by said means, said bolt having a nose with an inclined forward face adapted to ride over the striker plate as the door carrying the bolt is closed, a spring tending to press said bolt into projected position, hand operated means adapted to retract the bolt, and cam means for deflecting the outer end of the bolt laterally by
60 and during projecting movement thereof,

against said lateral surface of the striker, to force the door against said abutment, said last named means being constructed to permit rearward yielding of said bolt against
70 said spring in case of pressure exerted laterally by the door or jamb against the bolt.

4. In a door latch, the combination of a plate having bolt guiding means thereon, a bolt mounted on said plate for sliding
75 movement and guided by said means, said bolt having a nose with an inclined forward face adapted to ride over a striker plate as the door carrying the bolt is closed, a spring tending to press said bolt into projected
80 position, hand operated means adapted to retract the bolt, said bolt having a surface extending rearwardly from the forward end of said inclined forward face, adapted to engage against the striker when
85 the bolt is projected, and said plate having an inclined forward surface up which a surface of said bolt on the side thereof opposite to said first named surface will ride to force said first named surface against the
90 striker, and down which the bolt will recede when lateral pressure is exerted thereon sufficient to overcome said spring.

5. In a door latch, the combination of a plate having bolt guiding means thereon, a
95 bolt mounted on said plate for sliding movement and guided by said means, said bolt having a nose adapted to be moved laterally when the bolt is projected, said nose having an inclined forward face adapted to
100 ride over a striker plate as the door carrying the bolt is closed, a spring tending to press said bolt into projected position, hand operated means adapted to retract the bolt, said bolt having a surface extending rearwardly from the forward end of said inclined forward face, adapted to engage
105 against the striker when the bolt is projected, and having a projection extending laterally from its side opposite to said surface, to the rear of said inclined forward face, said projection having an inclined front surface, said projection being adapted to slide over said plate, and said plate having
110 an inclined front surface up which the inclined front surface of said projection will ride, and on which it will firmly bear, to force said first named surface against the striker.

6. In a door latch, the combination of a
120 door jamb having a striker and an abutment against which the door seats when closed, a door having a plate thereon, a bolt slidably mounted on said plate and adapted to engage said striker, a spring tending to press
125 the bolt into projected position, hand operated means adapted to retract the bolt, and cam means for forcing the outer end of the bolt laterally, during its projection, against a lateral surface of said striker and for 130

causing the bolt to press said door firmly against its said seating abutment, said bolt having a nose adapted to ride over the striker as the door is closed, and said cam means being constructed to permit rearward yielding of said bolt against the pressure of said spring during lateral pressure of the door or jamb against said bolt.

7. In a door latch, the combination with a door jamb, having a striker with a lateral bearing surface, and an abutment against which the door seats when closed, of a door having a runway thereon with an inwardly inclined surface at its outer end, a spring pressed bolt slidably mounted on said runway and having a projecting beveled nose and a lateral projection back of the nose slidable on said runway and having a front surface adapted to ride up said inclined runway surface during projection of said bolt, to force a surface of said nose laterally against said lateral bearing surface of the striker as it slides over the same and at the same time by said projection force the door against said abutment.

8. In a door latch, a casing having a bolt compartment, a bolt therein having a nose with an inclined forward face adapted to ride over a striker plate as the door carrying the bolt is closed, and having an enlarged inner end slidably and rockably fitting the compartment, a spring positioned to project the bolt forwardly, an operating handle positioned and adapted to retract the bolt against the spring, and means for deflecting the movement of the outer end of the bolt, to rock the same about its inner end, by and during projecting movement thereof.

9. In a door latch, the combination of a

member having bolt guiding means thereon, a bolt mounted on said member for sliding movement and guided by said means, said bolt having a bearing surface adjacent its forward end and said member having a surface adapted to coact with said bearing surface of the bolt, one of said surfaces being inclined, to move the outer end of the bolt laterally, during projecting movement thereof, into engagement with a lateral surface of the keeper, to insure a firm seating of the door, and means for resiliently holding the bolt in projected position, with said bearing surface of the bolt resting on said coacting surface of said member, said coacting surfaces being constructed to permit sufficient rearward movement of the bolt from its projected position to relieve strain in case of pressure exerted laterally by the door or jamb against the bolt.

10. In a door latch, a casing having a bolt compartment provided with a straight runway portion and having an inclined wall at its outer end, a single latch bolt spring pressed into projected position and movable in said compartment, having an inner end portion slidably and rockable on said straight runway portion, and provided with a nose having a surface on one side engageable with the inclined wall to shift the nose of the bolt laterally, when the bolt is projected, and an inclined face on the opposite side of the bolt for moving on the adjacent edge of the casing to return the bolt into its compartment, when the bolt is retracted.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut this 23d day of November A. D. 1921.

RAYMOND G. MOORE.