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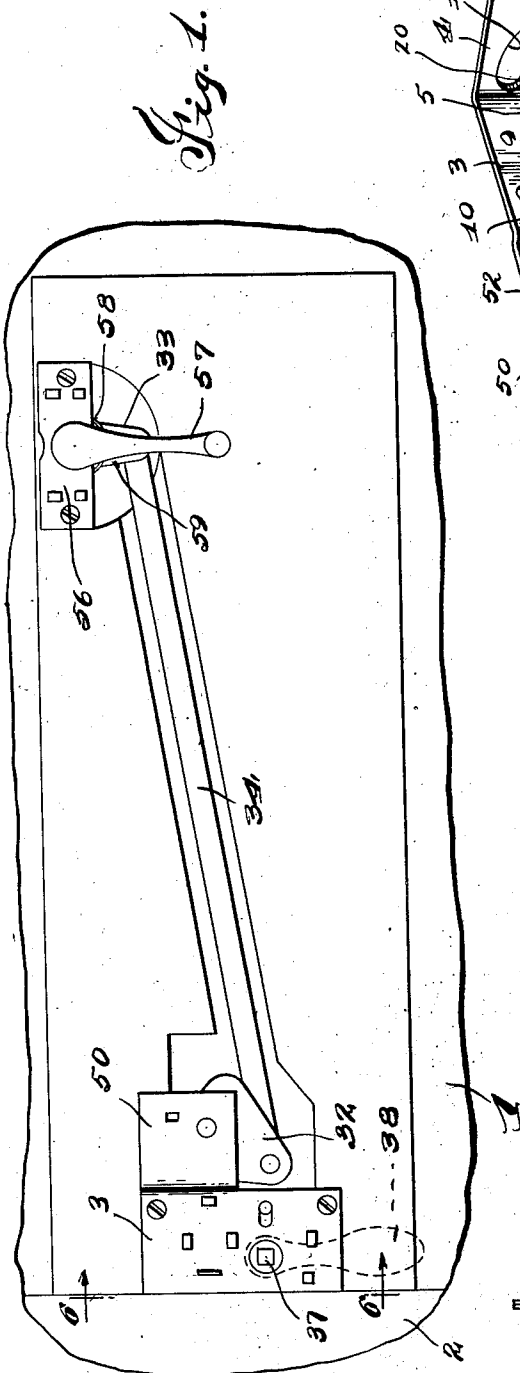
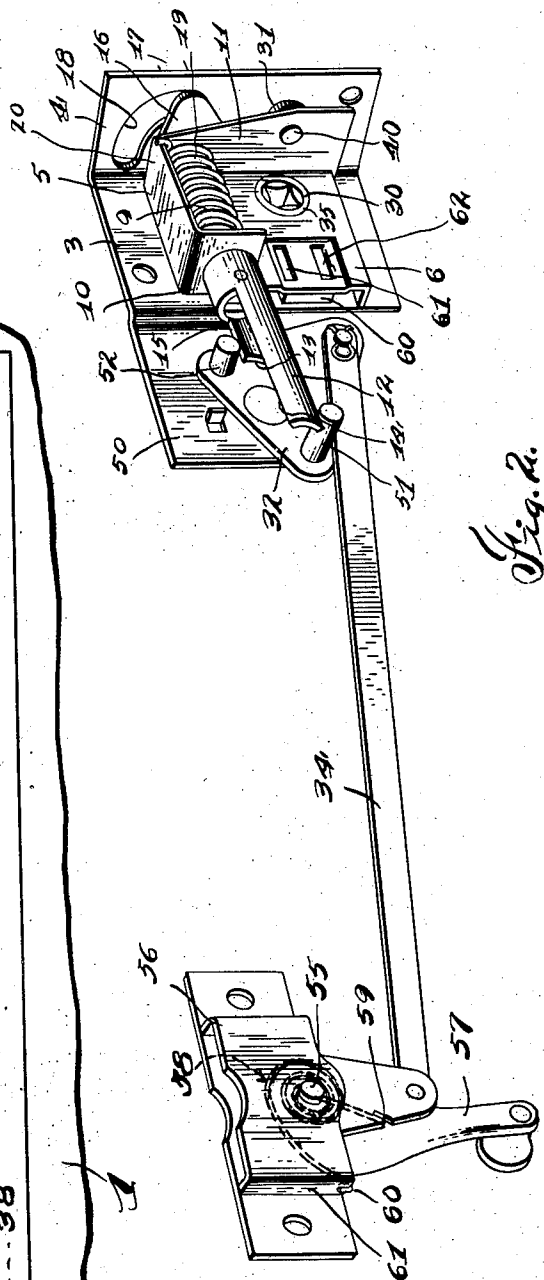
D. MILLER

1,865,581

COMBINED DOOR LATCH AND KICK-OUT ASSEMBLY

Filed Jan. 21, 1929

3 Sheets-Sheet 1



INVENTOR

Dorr Miller

BY

Whittmore Hulbert & Whittmore, Attorneys

ATTORNEYS

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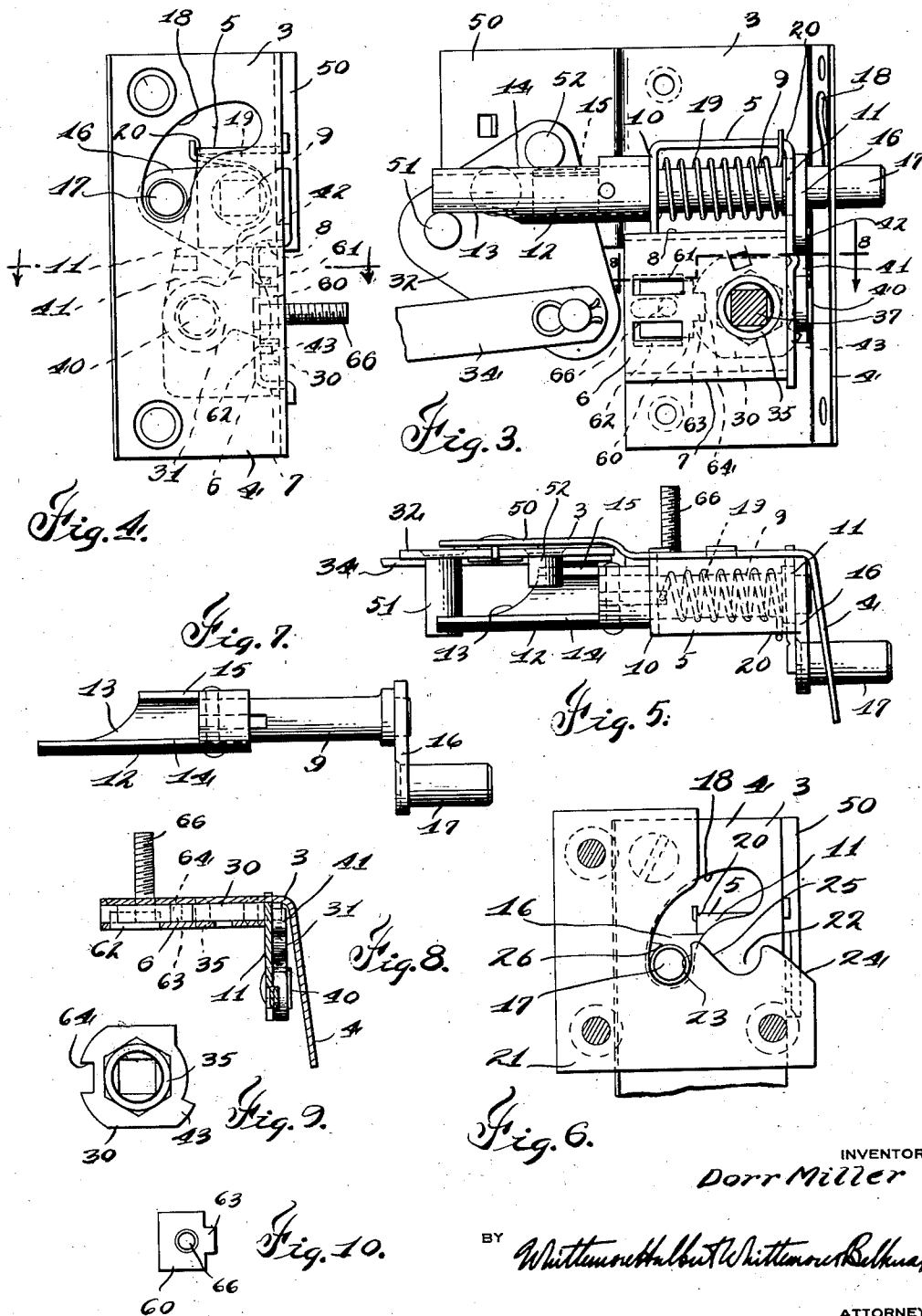
D. MILLER

1,865,581

COMBINED DOOR LATCH AND KICK-OUT ASSEMBLY

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3 Sheets-Sheet 2



INVENTOR
Dorr Miller

BY *Whittemore Halbut Whittemore Kellogg*

ATTORNEYS

July 5, 1932.

D. MILLER

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COMBINED DOOR LATCH AND KICK-OUT ASSEMBLY

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3 Sheets-Sheet 3

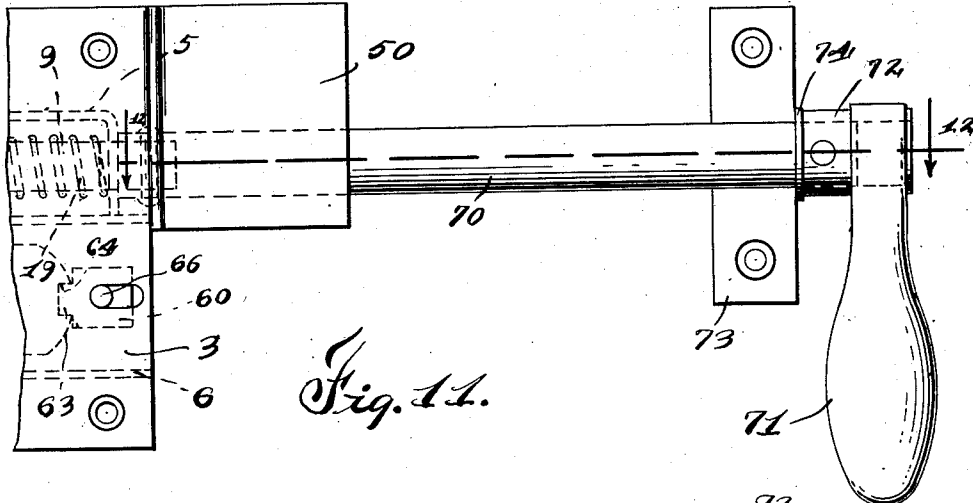


Fig. 11.

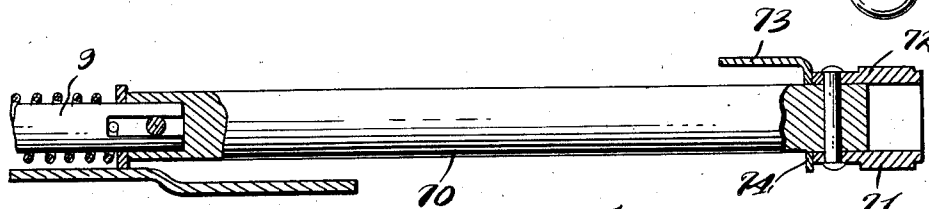


Fig. 12.

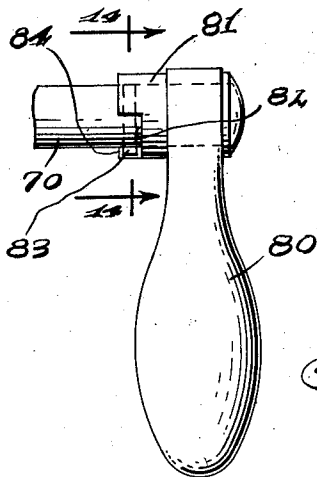


Fig. 13.

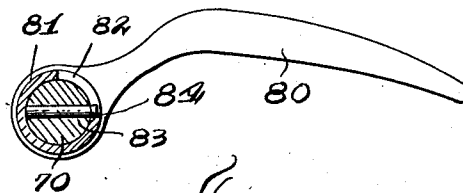


Fig. 14.

INVENTOR

Dorr Miller

BY

Whittemore Hall & Whittemore Belknap

ATTORNEYS

UNITED STATES PATENT OFFICE

DORR MILLER, OF DETROIT, MICHIGAN, ASSIGNOR TO THE DURA COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO

COMBINED DOOR LATCH AND KICK-OUT ASSEMBLY

Application filed January 21, 1929. Serial No. 333,934.

This invention relates generally to combined door latch and kickout mechanism and consists of certain novel features of construction, combinations and arrangements of parts that will be hereinafter more fully described and particularly pointed out in the appended claims.

One of the essential objects of the invention is to provide an efficient mechanism of this type in which the latch bolt has a rotating shaft that is adapted to be actuated from opposite sides of the door by independently operable means.

Another object is to provide a latch bolt keeper having means for receiving the door latch bolt when the door is partially closed and when fully closed and having means constituting a kick-out associated with a portion of the means aforesaid for directing the latch bolt and door carrying the same to open position.

Another object is to provide an operating cam bracket that cooperates with the latch case plate to support and enclose the door latch operating cam and that has means for guiding a suitable bolt for dogging the door latch bolt operating cam.

A further object is to provide a strong and durable latch mechanism that is simple in construction and that can be manufactured and installed at a comparatively low cost.

In the accompanying drawings, Figure 1 is a fragmentary elevation of a door and door jamb with latch mechanism embodying my invention applied thereto;

Figure 2 is a perspective view of the latch mechanism;

Figure 3 is an enlarged fragmentary elevation of the latch mechanism;

Figure 4 is an end elevation of the construction shown in Figure 3;

Figure 5 is a top plan view of the construction shown in Figure 3;

Figure 6 is a fragmentary sectional view taken on the line 6—6 of Figure 1;

Figure 7 is a detail view of the latch bolt, lever shaft and extension;

Figure 8 is a sectional view taken on the line 8—8 of Figure 4;

Figure 9 is a detail view of the operating cam;

Figure 10 is a detail view of the dogging bolt;

Figure 11 is a fragmentary elevation of a slightly modified form of construction;

Figure 12 is a fragmentary sectional view of the construction shown in Fig. 11;

Figure 13 is a view similar to Fig. 12 but showing another modification;

Figure 14 is a fragmentary sectional view of the construction shown in Figure 13.

Referring now to the drawings, 1 is a swinging door of a motor vehicle and 2 is a stationary jamb therefor. 3 is a latch case plate secured to the inner side of the door 1 adjacent to the free edge thereof and having a lateral flange 4 at one edge secured to the said free edge of the door. 5 is a latch bolt bracket of U-configuration having an edge engagement with the case plate 3 adjacent to the lateral flange 4, 6 is an operating cam bracket of channel configuration opening toward the case plate 3 adjacent to the bracket 5 and having the side walls 7 and 8 of the channel bearing against the case plate 3 and disposed at substantially right angles to the lateral flange 4. 9 is a latch shaft journaled in the side walls 10 and 11 of the U-shaped bracket 5 and provided at its rear end with a tubular sleeve extension 12 that is rigid with the shaft 9 and that is cut away as shown to provide a longitudinally curved cam edge 13 and a pair of straight substantially parallel edges 14 and 15. 16 is a latch lever non-rotatably sleeved on the shaft 9 at the forward end thereof and disposed between and substantially parallel to the lateral flange 4 and side wall 11 of the bracket 5, 17 is a latch pin or bolt projecting laterally from the lever 16 at the free end thereof and extending through and movable in an arcuate slot 18 in the lateral flange 4, 19 is a coil spring sleeved upon the shaft 9 between the side walls 10 and 11 of the bracket 5 and having its opposite ends connected to the base 20 of the bracket 5 and to the shaft 9 whereby the latch pin 17 will always be urged by the spring 19 toward the lower end of the slot 18, and 21 is a latch plate or keeper attached to

an edge of the door jamb 2 and having upwardly opening recesses 22 and 23 arranged in tandem for receiving the latch pin 17.

Preferably the keeper 21 has an inclined portion 24 to direct the latch pin 17 upwardly into the forward recess 22, and the rear wall 25 of the latter is also inclined to guide the latch pin 17 into the second recess 23. Thus when the door is partially closed the pin 17 will be received in the first recess 22 and when fully closed will be received in the second recess 23. It will also be noted that the rear wall 26 of the second recess 23 is straight and in a vertical plane for a portion of its length, preferably from a point adjacent the base of a recess to a point slightly above the upper edge of the forward wall thereof, and then curves upwardly and forwardly so that it serves as a cam or kickout surface to urge the latch pin 17 outwardly as it is raised in the arcuate slot 18. Thus the door 1 carrying the latch pin 17 will be urged or moved outwardly to open position away from the jamb 2 when the latch pin 17 is moved upwardly along the said upwardly and outwardly curved cam surface 26.

In the present instance the latch pin 17 may be actuated against the tension of the spring 19 from the outer side of the door by means of an operating cam 30 and a connecting cam 31, or from the inside of the door by means of remote control mechanism including the pivoted levers 32, 33 and connecting link 34. As shown, the operating cam 30 is located in the channel of the bracket 6 and has a hub 35 journaled in the case plate 3 and base of the channel bracket 6 and non-rotatably receiving the shank 37 of a suitable outside operating handle 38. The connecting cam 31 is pivotally mounted between the bracket side wall 11 and the lateral flange 4 on a pin 40 projecting laterally from the bracket wall 11 and has an arm 41 that is normally held by a shoulder 42 of the spring urged latch lever 16 against a shoulder 43 of the operating cam 30 so that when the latter is actuated by the handle 38 the connecting cam 31 will be moved by the operating cam 30 and will thereby cause the latch lever 16 to raise the latch pin 17 in the arcuate slot 18. Preferably the lever 32 is pivoted at one end to an offset portion 50 of the case plate 3 and is provided at substantially diametrically opposite points of its pivot with laterally projecting pins or lugs 51 and 52, one being short and normally engaging the short straight edge 15 of the shaft extension 12, and the other being longer and normally engaging the cam edge 13 of the said extension. As shown, the opposite free end of the lever 32 is pivotally connected to the forward end of the link 34 which in turn is pivotally connected at its rear end to the free end of the lever 33. Preferably this lever 33 is non-rotatably secured to a stud

shaft 55 journaled in a boxlike casing 56 on the inner side of the door and is adapted to be actuated by a suitable operating handle 57 rigid with the inner free end of the stud shaft 55. If desired a spring 58 having a portion coiled about the shaft 55 and having diverging arms 59 and 60' respectively engaging an edge of the lever and a wall 61' of the casing 56 may be used to return the remote control mechanism just described to and normally hold the same in forward neutral position. When the handle 57 is operated to retract the latch pin 17 from the keeper, the forward lever 32 will be moved about its pivot by the lever 33 and link 34 and will cause the pins 51 and 52 engaging the edges 13 and 15 of the extension 12 to rotate the latter and shaft 9 and thereby cause the lever 16 to raise the latch pin 17 in the arcuate slot 18. However, when this is accomplished the outside bolt retracting means including the cams 30 and 31 will not be disturbed as the shoulder 42 of the lever 16 will be raised free from the arm 41 of the connecting cam 31. Likewise the outside operating means for the latch bolt may be operated without disturbing the inside latch bolt operating means, as the edges 13 and 15 of the extension 12 will be moved from the pins 51 and 52 and the edge 14 will be moved against the end of the pin 52 when the shaft 9 is rotated from the outside by the cams 30 and 31. Thus the outside and inside bolt operating means are independently operable.

With constructions of this type it is desirable to have some means operable from the inside of the vehicle for dogging or rendering the outside operating means inoperative for retracting the latch bolt when the door is closed. In the present instance this is accomplished by a bolt 60 that is slidably mounted on the case plate 3 between interturned lugs 61 and 62 of the bracket 6 and that is provided at its forward end with a substantially rectangular tongue 63 that is engageable in a correspondingly shaped recess 64 in the operating cam 30 to prevent rotation thereof by the handle 38 and shank 37. Preferably the bolt 60 is operated by a stem 66 projecting laterally therefrom.

In Figures 11 and 12 I have shown a slight modification in which the remote control mechanism upon the inner side of the door is rigid with the latch shaft 9 and comprises a relatively long shaft 70 and an operating handle 71. As shown the shaft 70 is rigid with and constitutes a rearward extension of the shaft 9, while the handle 71 is disposed at substantially right angles to and has a hub 72 rigidly mounted on the shaft 70 at the rear end thereof. Preferably, a bracket 73 is secured to the inner side of the door and has a lateral flange 74 sleeved upon and constituting a support for the shaft 70 adjacent to the

handle 71. Thus with this construction the shaft 70 is engaged directly by the handle 71 and may be rotated thereby to cause the shaft 9 to actuate the latch bolt 17. Due to the arrangement of the latch shaft 9, lever 16 and connecting cam 31 such movement of the latch shaft 9, lever 16 and bolt 17 by the remote control shaft 70 and handle 71 will not move or effect the outside bolt actuating means, however, when the latch lever 16, shaft 9, and bolt 17 is moved by the connecting cam 31 from the outer side of the door, the inside remote control mechanism comprising the shaft 70 and handle 71 will be simultaneously actuated therewith due to the rigid connection between the shafts 70 and 9.

In Figures 13 and 14 I have shown another modification in which the operating handle 80 is similar to the handle 71 but is movable relative to the shaft 70. As shown the hub 81 of the handle 80 is sleeved upon the shaft 70 and is provided at one end with a segmental recess 82 that receives a pin 83 projecting laterally from the shaft 70 normally one end 84 of the recess 82 in the hub 81 abuts the pin 83 so that the shafts 70 and 9 may be rotated by the handle 80. To actuate the latch bolt, however, when the latch lever 16, bolt 17, and shaft 9 are moved by the connecting cam 31 from the outer side of the door, the shaft 70 will be rotated by the shaft 9 as in Figures 12 and 13, but in this instance the handle 80 will not be moved due to the slot and pin connection between the hub 81 and shaft 70.

While it is believed that from the foregoing description, the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What I claim as my invention is:

1. In a latch mechanism, a latch bolt assembly including a pivotally mounted member, a normally projecting latch bolt carried by said member, a rotary part connected to said member, and means for retracting said bolt including two independently operable means engageable respectively with said member and part.

2. In a latch mechanism, a latch bolt assembly including a latch bolt, and a rotary shaft, and remote control mechanism for actuating said bolt including a member mounted independently of said shaft and having means for turning the same, the construction and arrangement of said shaft and member being such that the shaft is capable of turning independently of said member.

3. In a latch mechanism, the combination with a latch bolt assembly including a rotary shaft, a lever carried by said shaft, and a latch bolt carried by said lever, of actuat-

ing means for the latch bolt including independently operable parts separate from the bolt and associated with said shaft and lever respectively.

4. In a latch mechanism, the combination with a case plate, a latch bolt bracket carried by said case plate, a rotary shaft journaled in said bracket, a lever carried by said shaft, and a latch bolt carried by said lever, of actuating means for said latch bolt including a rotary cam on the case plate operatively associated with said lever.

5. In a door latch mechanism, a movable door latch bolt, operating means for said bolt including a pivotally mounted member having lateral projections, and a connection between said bolt and member including a rotary part having portions extending between and adapted to be engaged by said lateral projections.

6. In a door latch mechanism, a movable door latch bolt, operating means for said bolt including a pivotally mounted member having a lateral projection, and connection between said bolt and member including a rotary part substantially parallel to said pivotally mounted member and having a portion adapted to be engaged by said lateral projection.

7. In a door latch mechanism, a latch bolt having a rotary shaft, and actuating means for said bolt including a pivotally mounted lever engageable with said shaft.

8. In a door latch mechanism, a latch bolt having a rotary shaft provided with an extension having spaced longitudinal edge portions, and actuating means for said bolt including a pivotally mounted member having projections engageable with the edge portions aforesaid of said rotary shaft.

9. In a door latch mechanism including a latch bolt having a rotary shaft provided with a rearward extension having a straight edge and a longitudinally curved edge, and actuating means for the bolt including a pivotally mounted lever having lateral projections normally engaging the straight edge and the curved edge aforesaid of said extension.

10. In a door latch mechanism, a pivotally mounted part having spaced lateral projections, and a latch bolt provided with a shaft having portions extending between and actuable by the lateral projections aforesaid.

11. In a door latch mechanism, the combination with a case plate, of an operating main bracket on said case plate and having spaced intumed lugs, a latch bolt carried by the case plate, actuating means for said bolt including a rotary part on the case plate and having a recess in one side thereof, and dogging means for said actuating means including a bolt slidable on the case plate between the intumed lugs of said bracket and having a projection engageable in the recess in said rotary part.

12. In a door latch mechanism, the combination with a case plate having a lateral flange at the forward edge thereof, of a latch bolt bracket on the case plate, a latch bolt having a rotary shaft carried by the first mentioned bracket, and actuating means for said latch bolt including cooperating parts substantially parallel to said case plate and lateral flange respectively.

13. In a latch mechanism, the combination with a case plate having a lateral flange at the forward edge thereof, of a latch bolt bracket of U-configuration having edge engagement with said case plate, one side of the U being substantially parallel to said lateral flange, a latch bolt shaft journaled in the sides of the U, a latch bolt lever secured to said shaft and movable between one side of the U and the lateral flange, a latch bolt projecting laterally from said lever and extending through said lateral flange, and actuating means for said latch bolt including a rotary cam carried by a side of said bracket and engageable with said lever, and a rotary part on the case plate engageable with said cam.

14. In a door latch mechanism, a latch bolt having a rotary shaft provided with an extension having substantially parallel straight edges and a longitudinally curved edge, and actuating means for said bolt including a lever having lateral projections engageable with the longitudinally curved edge and one of said straight edges, said straight edges and curved edge being so arranged that rotation of the shaft and extension by any means other than said lever will cause the longitudinally curved edge and the straight edge aforesaid to be moved away from said lateral projections thereby leaving said projections and lever motionless and causing the other of said straight edges to move toward an end of one of said projections.

15. A door latch bolt keeper having a recess for receiving a latch bolt, one edge of said recess serving as a kickout for directing said latch bolt away from said keeper when the said bolt is moved from said recess.

16. In a door latch mechanism, a latch bolt adapted to swing in a plane parallel with the free edge of a door, and a latch bolt keeper attachable to the free edge of a door jamb and having a recess for receiving the latch bolt aforesaid, one edge of said recess being a cam for imparting to the latch bolt an outward movement that will cause the door carrying said latch bolt to be thrust outwardly with respect to said jamb.

17. In a latch mechanism, a rotary shaft, a lever carried by said shaft, a latch bolt carried by said lever, and actuating means for said latch bolt including a rotary cam operatively associated with said lever.

18. In a latch mechanism, a rotary shaft a lever actuatable by said shaft, a latch bolt carried by said lever, and actuating means

for said latch bolt including independently operable members engageable respectively with said shaft and lever.

19. In a door latch, a swinging lever, a latch bolt carried by said lever, a pivotally mounted member having a lateral projection, and a shaft substantially parallel to said member and adapted to be engaged by said lateral projection, and operatively connected to said lever.

20. In a door latch, a lever, a latch bolt actuatable by said lever, and operating means for the lever including a pivotally mounted member having a lateral projection, and a rotary member operatively connected to said lever and having a portion extending at substantially right angles to and engageable by the lateral projection.

21. In a door latch, a rotary shaft, a lever actuatable by the shaft, a latch bolt actuatable by the lever, remote control mechanism for turning the shaft, and means independent of the remote control mechanism for actuating the bolt including a pivotally mounted member engageable with the lever.

22. In a door latch, a rotary shaft, a lever connected to said shaft, a latch bolt connected to said lever, a rollback, a connection between said rollback and lever including a pivotally mounted member, and means for rendering said pivotally mounted member inoperative including means for holding the rollback against movement.

23. A door latch bolt keeper comprising a plate having a recess for receiving a latch bolt, one edge of said recess being curved and serving as a kick-out for directing said latch bolt away from said keeper when the said bolt is moved from said recess.

24. A door latch bolt keeper having a recess for receiving a latch bolt having an upwardly opening recess for receiving a latch bolt, one edge of said recess being curved forwardly over the upwardly opening recess and serving as a kick-out for directing said latch bolt away from said keeper when the said bolt is moved from said recess.

25. A door latch bolt keeper having two upwardly opening recesses arranged one in rear of the other and adapted to successively receive a latch bolt, the rear edge of the rear recess being curved forwardly over said rear recess to a point substantially in vertical alignment with the rear wall of the forward recess and serving as a kick-out for directing said latch bolt away from said keeper when the said bolt is moved from said rear recess.

In testimony whereof I affix my signature.
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