June 24, 1941. E. D. DALL 2,246,784

AUTOMOBILE DOOR LOCKING STRUCTURE

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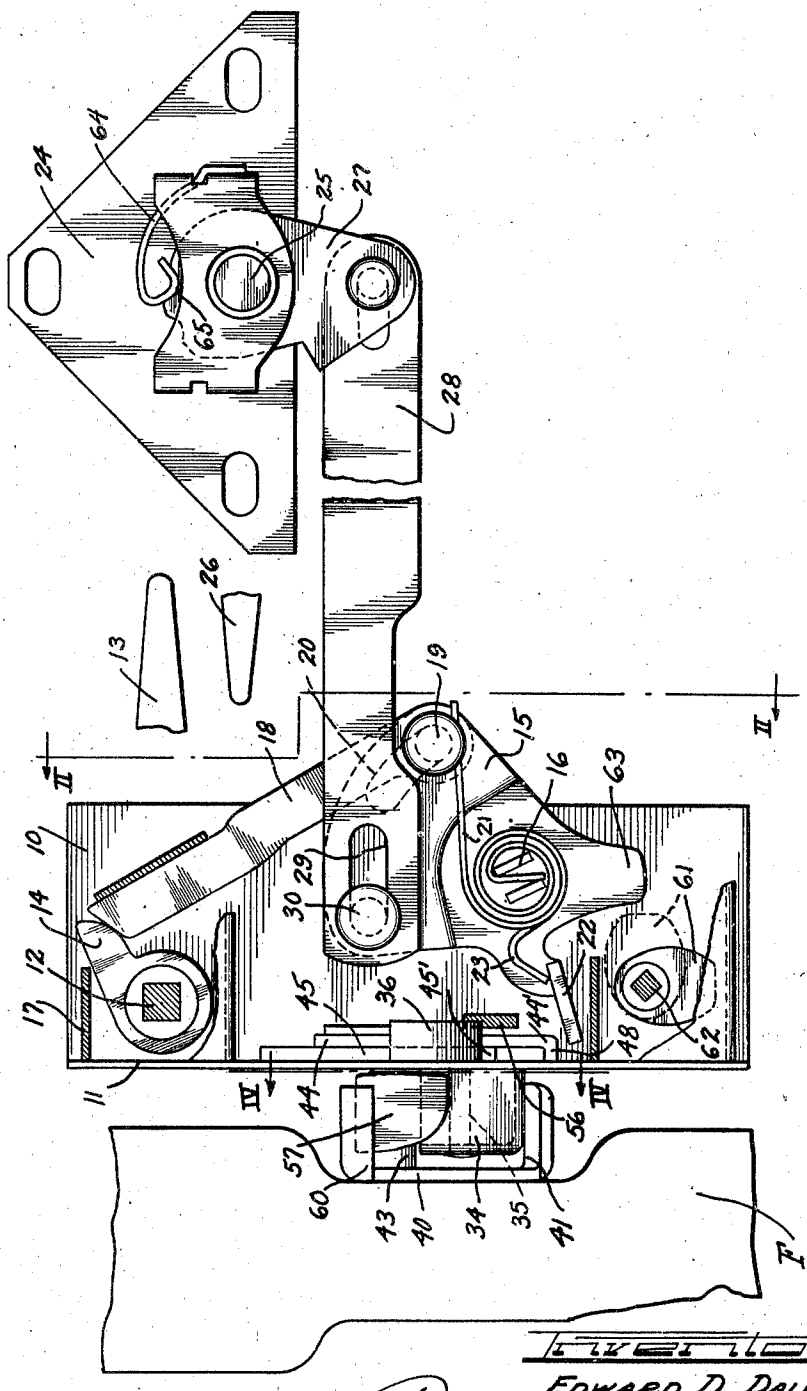


Fig. 1.

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Fig. 3.

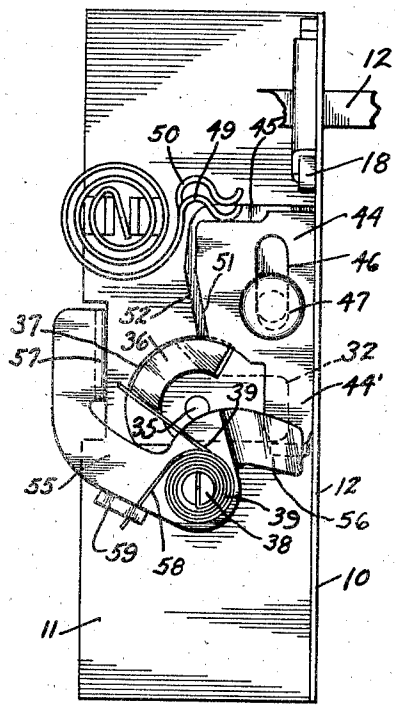


Fig. 2.

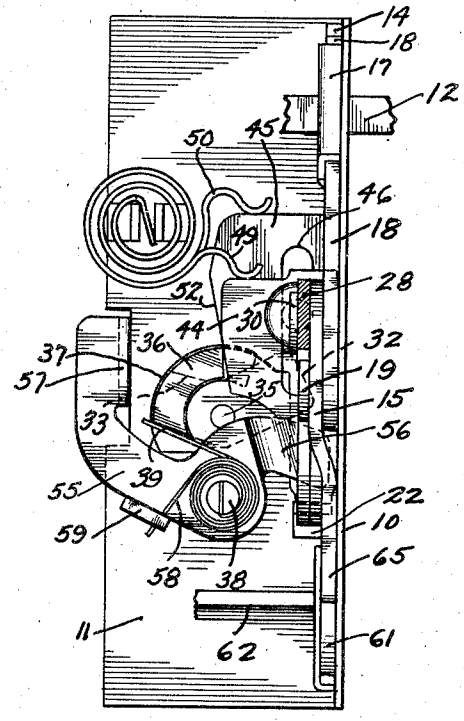


Fig. 5.

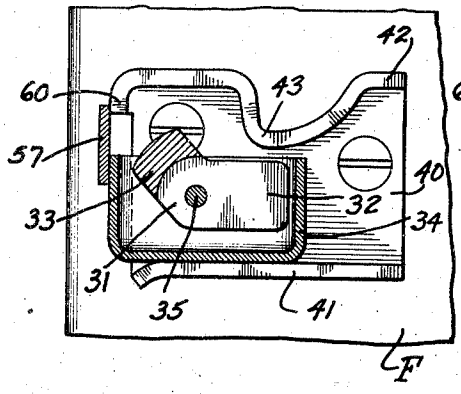
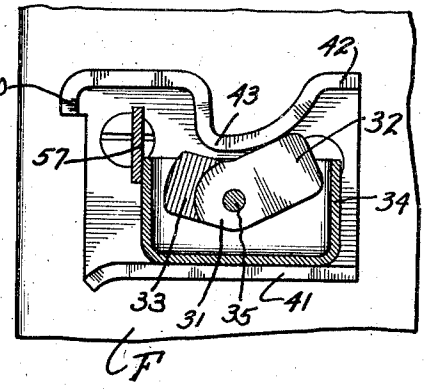


Fig. 4.



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2,246,784

AUTOMOBILE DOOR LOCKING STRUCTURE

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Application February 23, 1940, Serial No. 320,251

2 Claims. (Cl. 70—153)

This invention relates to locking structure adapted particularly for doors of automobiles for the individual locking of doors.

An important object of the invention is to effect locking of a door by latching elements, preferably of the rocking or rotary type cooperable with keeper structure on the door post or frame and with the latching elements releasable by operation of inside handle and outside handle structure on the door.

Still another important object is to provide dogging means, preferably operable by key means from the outside of the door, for preventing unlatching of the door either by the outside handle or the inside handle.

The above enumerated and other features of the invention are incorporated in the structure shown on the drawings, in which drawings:

Figure 1 is a front elevation of the locking structure and control means therefor on a door, and the cooperating keeper structure on a door post or frame;

Figure 2 is a section on the plane II—II of Figure 1, Figures 1 and 2 showing the locking structure in locking position;

Figure 3 is a view similar to Figure 2, showing the latching elements in cocked or unlatching position;

Figure 4 is a section on the plane IV—IV of Figure 1, showing the keeper structure on the door post and the latch mechanism in latching cooperation with the keeper structure;

Figure 5 is a view similar to Figure 4 but showing the latching elements entering the keeper structure when the door is moved toward closing position.

The lock structure shown comprises a base wall 10, and a flange wall 11 on which the various operating parts are mounted. Extending through the wall 10 near the top thereof is the spindle 12 for the outside door handle 13, this spindle carrying a rollback 14. Near the lower end of the wall 10 a setting lever 15 is fulcrumed on a post 16. The rollback 14 is within a housing 17 into which a link 18 extends, this link at its lower end having a pin 19 extending through an arcuate slot 20 in the setting lever 15. A spring 21 anchored on the post 16 engages the pin and tends to hold the link 18 in its upper position. At its outer side the lever 15 has an abutment extension 22, and a spring 23 anchored on the post 16 engages against the top of this abutment and tends to swing the setting lever in counter-clockwise direction (Figure 1).

Mounted on the door is a supporting structure 24 for the shaft 25 on which the inside handle 26 is mounted, a lever arm 27 extending downwardly from the shaft to whose lower end is pivoted a strap 28 which at its outer end has the slot 29 receiving the pin 30 secured to the setting lever 15.

With the arrangement thus far described, when the outside handle 13 is swung down, the rollback 14 will shift the link 18 downwardly and the engagement of the link pin 19 with the setting lever 15 will cause clockwise rotation of this lever, the slot 20 limiting this swing of the lever. When the lever 15 is thus operated by the outside handle, the pin 30 on the lever travels in the slot 29 of the strap 28.

When the inside handle 26 is swung downwardly and the strap 28 is shifted inwardly, the strap pulls on the pin 30 and the lever 15 will be rotated in clockwise direction.

The main latch bolt 31 is of V shape and has the latching leg 32 and the setting leg 33. The latch bolt is within a rectangular cup-shaped housing 34 secured to the wall 11 and the bolt is rockable on a pin 35 extending through the housing and secured at its ends to the wall 11 and the outer wall of the housing respectively.

The setting leg 33 of the bolt has the arcuate abutment extension 36 which projects through an arcuate slot 37 in the wall 11. The wall 11 has a post 38 thereon on which is anchored a spring 39 which engages against the lower end of the abutment 36 and tends to rock the latch bolt to its cocked or unlatching position shown on Figures 3 and 5.

The latch bolt is cooperable with a keeper fitting 40 secured to the door post or frame F. The keeper structure has the lower horizontal straight wall or flange 41, the upper wall 42 being deflected downwardly to provide a latch abutment 43. When the door is open, the latch bolt is cocked as shown on Figure 5 and when the door is swung toward its closed position the housing 34 with the bolt therein passes along the keeper, and as the setting leg 33 of the bolt encounters the latching abutment 43, the latch bolt will be rocked for engagement of its latching leg 32 behind the abutment for latching the door.

Means are provided for holding the latch bolt either in its cocked or latching position. The means shown comprises front and rear dogging plates 44 and 45 which have longitudinally extending slots 46 for receiving a guide pin 47 extending from the wall 11, the plates being shiftable vertically. The dogging plates 44 and 45

have downwardly extending legs 44' and 45', the inner edges of the plates and the legs engaging the wall 10 to be guided thereby. The leg 44' has the inward deflection 48 extending below the leg 45' of the inner dogging plate and this extension 48 is above the abutment 22 on the setting lever 15 so that when this setting lever is rotated in clockwise direction (Figure 1) the dogging members will be shifted upwardly. Springs 49 and 50 press against the upper ends of the dogging plates 44 and 45 respectively and tend to shift these plates downwardly.

When the lever 15 is rotated by operation of either the inside or the outside handle for the door, the abutment 22 on the lever will raise the dogging plates to their upper position in which the lower edges of the plates are above and clear of the abutment 36 on the latch bolt, and as the door is then swung open, the spring 39 will swing the latch bolt into its cocked position, and then when the door handle is released, the springs 49 and 50 will shift the dogging plates downwardly with their lower edges against the top of the latch bolt abutment and the latch bolt will thus be held in its cocked or unlatching position.

When the door is swung from open to closed position, the latch bolt is swung to its latching position. The inner edges of the dogging plates 44 and 45 present wedging surfaces 51 and 52 respectively, the surface 52 being a distance outwardly of the surface 51. Now, upon closing movement of the door, as the inner end of the abutment 36 of the latch bolt clears the lower end of the wedge surface 51, the dogging plate 44 will be shifted downwardly by its spring 49 for engagement of the wedging surface 51 with the end of the abutment and the latch bolt is forced around further in latching direction, and as soon as the abutment end clears the lower end of the wedge surface 52, the dogging plate 45 will be shifted down by its spring 50 for wedging engagement of the surface 52 with the abutment and the latch bolt is urged in latching direction so that the door will be fully closed and will be held against rattling. Figures 1 and 2 show the dogging plate 44 at the lower end of its downward movement, and the dogging plate 45 bringing its wedging surface 52 into engagement with the latch bolt abutment. The dog plates thus serve to hold the latch bolt in latching position and their wedge surfaces will take up any wear or lost motion between the door and the frame so that the latch bolt will hold the door firmly in closed position.

In addition to the main latch bolt 31 I provide safety latch bolt means. A lever 55 is fulcrumed on the post 38 and has its inner leg 56 extended in position above the abutment 22 of the setting lever 15. The outer end of the lever is deflected to form a latch plate 57. A spring 58 anchored on the post 38 engages an abutment 59 on the lever and tends to hold this lever with the latch plate 57 substantially in the plane of the door. The latch plate cooperates with a keeper lip 60 formed by deflecting downwardly the forward end of the keeper upper wall 42. When the door is moved to closing position, the upper portion of the keeper plate encounters the keeper lip and the lever 55 is rocked until the latch plate clears the keeper lip so that the spring 58 may swing the lever into latching position with the latching plate behind the keeper lip. Figure 5 shows the latching plate just entering into engagement with the keeper lip, and Figure 4 shows the safety latching plate in latching position. If a door is not swung a sufficient distance in closing direction for latching operation of the latch bolt 31, the safety latch plate will hold the door against accidental swinging open until the door is properly closed. When the setting lever 15 is rotated by one of the door handles to release the dogging plates from the main latch bolt, the abutment 22 engages with the end 56 of the safety latch lever and the lever is rotated to unlatch the latch plate 57 from the keeper.

I also provide means operable preferably by key means from the outside of the vehicle for dogging the setting lever 15 against operation by either the inside or the outside handle so that neither the outside handle nor the inside handle can effect unlatching of the door. A dogging arm 61 is secured on a spindle 62 which at its outer end is provided with suitable key operable means (not shown) for turning of the spindle. In the normal position of the dogging arm 61, as shown by full lines on Figure 1, the setting lever 15 is free for rotation. However, when the spindle 62 is turned and the arm 61 swung upwardly to the dotted position shown, the dogging arm will be in the path of the abutment extension 63 on the lever 15 to prevent rotation thereof by operation of either door handle so that the main latch bolt holding or dogging members 44 and 45 cannot be moved for release of the latch bolt for unlatching of the door. Thus, the door may be locked from the outside against unlatching by either door handle.

For the inside handle mechanism a spring 64 engages in a notch 65 in the lever to hold the lever in its normal position.

The safety latch bolt lever 55 operates to safety latch the door independently of movement of the main latch bolt. Upon operation of either of the door handles, both the main bolt and the safety latch bolt will be moved to be released from the keeper structure so that the door may be opened. When the setting lever 15 is dogged by the key-operated dogging arm 61, both of the door handles will be locked against movement and neither the main latch bolt nor the safety latch bolt can be released, and the door cannot be opened either from the outside or from the inside by operation of the handle mechanism.

I have shown a practical and efficient embodiment of the features of my invention, but I do not desire to be limited to the exact construction arrangement and operation shown and described as changes and modifications may be made without departing from the scope of the invention.

I claim as follows:

1. Locking means for the door of an automobile comprising keeper structure adjacent to the door, a rockable main latch bolt on said door cooperable with said keeper structure to latch the door in closed position, holding means on said door for holding said main latch bolt in latching position, a rockable safety latch bolt on the door cooperable with said keeper structure in advance of said main latch bolt to latch the door against opening movement, a releasing member on the door engageable with said holding means to first release the main latch bolt for unlatching movement and thereafter engageable also with said safety latch bolt for movement

thereof to unlatching position, an inside handle and an outside handle on the door adapted for independent movement to actuate said releasing member.

2. Locking means for the door of an automobile comprising keeper structure adjacent to the door, a rockable main latch bolt on said door cooperable with said keeper structure to latch the door in closed position, holding means on said door for holding said main latch bolt in latching position, a rockable safety latch bolt on the door cooperable with said keeper structure in advance of said main latch bolt to latch the door against opening movement, a releasing member on the door engageable with said holding means to first release the main latch bolt for unlatching movement and thereafter engageable also with said safety latch bolt for movement thereof to unlatching position, an inside handle and an outside handle on the door adapted for independent movement to actuate said releasing member, and means key operable from the outside of the door for dogging said releasing member against releasing movement.

EDWARD D. DALL.