April 13, 1943. J. VETTER, JR 2,316,199

LOCKING MECHANISM FOR DOORS

Filed Aug. 13, 1941

Fig. 1.

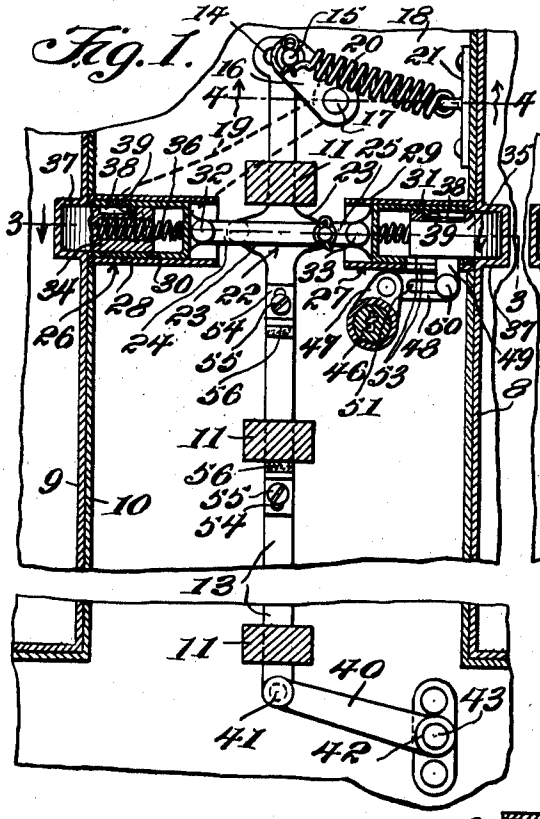


Fig. 2.

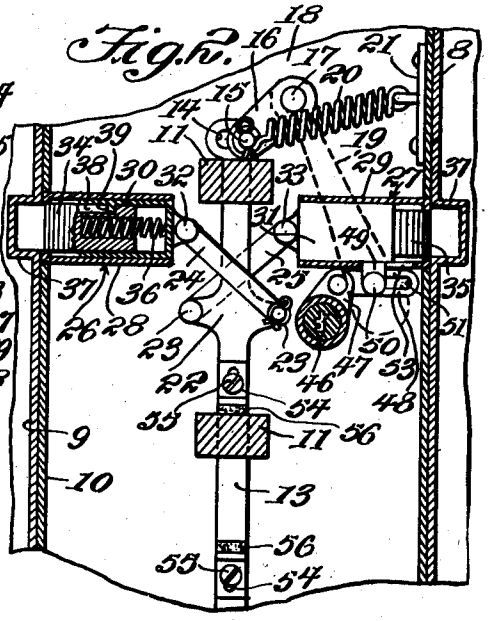


Fig. 3.

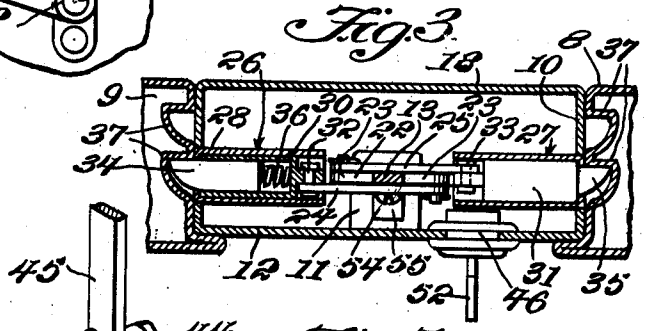


Fig. 4.

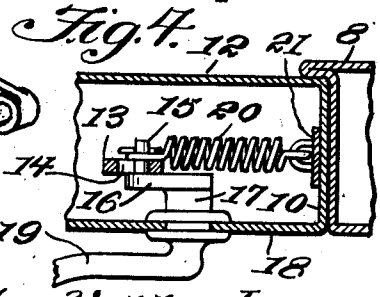
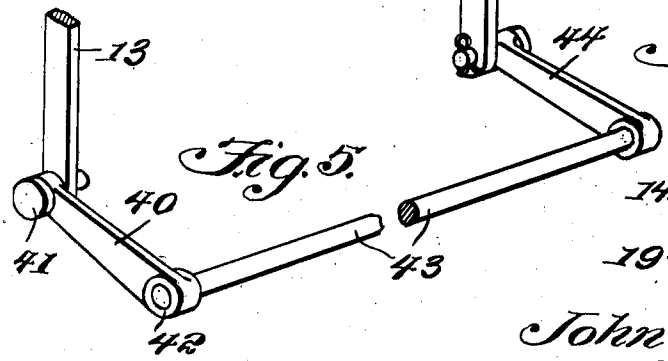


Fig. 5.



John Vetter Jr. INVENTOR

BY Victor J. Evans & Co.

ATTORNEYS

Witness: J. L. Wright

Patented Apr. 13, 1943 2,316,199

UNITED STATES PATENT OFFICE

2,316,199

LOCKING MECHANISM FOR DOORS

John Vetter, Jr., Cheyenne, Wyo.

Application August 13, 1941, Serial No. 406,680

3 Claims. (Cl. 70—264)

The present invention relates to improvements in locking mechanisms for doors and more particularly for use in locking automobile doors.

It is an object of the invention to provide a locking mechanism that will simultaneously latch oppositely disposed pairs of swingable doors through the medium of a single actuator.

Another object of the invention resides in the provision of locking means that will not only simultaneously lock and release doors at opposite sides of an automobile, but will also cause the front and rear door at each side to be simultaneously locked and released.

A further object of the invention is to provide a locking mechanism for vehicle doors having the above characteristics and including in addition thereto an independent key-operated means for releasing the lock on one of the doors from the exterior of the vehicle.

The invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a fragmentary vertical sectional view of a portion of the front and rear doors and the intermediate door post with the improved locking means being shown in locked position.

Figure 2 is a view similar to Figure 1 with the locking mechanism being shown in released position.

Figure 3 is a horizontal sectional view taken substantially on line 3—3 of Figure 1.

Figure 4 is a detail sectional view taken substantially on line 4—4 of Figure 1.

Figure 5 is a perspective view of the linkage mechanism employed for causing the actuation of the locking mechanism of oppositely disposed pairs of doors.

Referring to the drawing for a more detailed description thereof, the front and rear doors of an automobile are designated by the reference numerals 8 and 9, respectively, the usual hollow post 10 being provided, against which the doors fit when in closed position. In automobiles of the four-door sedan type, the door posts 10 are opposite each other and their lower ends rest upon the chassis frame and are secured thereto in a manner, not shown. In accordance with the present invention the locking mechanism for the doors is disposed within the post 10 and the actuator is attached on the outside of the post within the interior of the vehicle.

Bearing members 11 are suitably secured to the rear face 12 of the post 10 and are arranged in spaced relation as more particularly shown in Figure 1 of the drawing. The bearing members 11 are formed with aligned apertures through which extends a vertically disposed rod 13, said rod being supported substantially centrally of the door post 10. The upper end of the rod 13 is formed with a slot 14 for receiving a pin 15 carried by the lever 16. The other end of the lever 16 has a portion 17 which extends through the front face 18 of the post 10 and to which is connected an operating handle 19 adapted to be actuated for reciprocating the rod 13 in a manner to be hereinafter described. Since the handle 19 is moved from the position shown in Figure 1 of the drawing to that shown in Figure 2 of the drawing and is to be retained in the respective positions, a spring 20 is employed having one end secured to the pin 15 and the other end attached to a plate 21 mounted on the side wall of the inner portion of the post 10, the tension of which will retain the handle 19 in its off-center positions.

The rod 13 is formed with a web-shaped portion 22 a predetermined distance below the upper end of the rod, said web-shaped portion being formed with opposed ends 23 to which are attached links 24 and 25. The links 24 and 25 are associated with latches 26 and 27, respectively, and upon actuation of the rod 13, said links will move said latches to a locked and released position. As is to be understood, the links 24 and 25 are pivotally connected to the web-shaped portion 22, the other ends thereof being pivotally connected to the latches 26 and 27, respectively.

The latches 26 and 27 include hollow casings 28 and 29 suitably secured within the post 10 and to opposed sides thereof. A hollow cylindrical-shaped member 30 and 31 is slidably disposed within the casings 28 and 29, respectively, the outer ends of said members being pivotally connected with the links 24 and 25 as indicated at 32 and 33, respectively. In Figure 1 of the drawing, the doors are shown in locked position at which time the link 24 overlies the link 25, said links being disposed in a horizontal position. Bolts 34 and 35, respectively, are slidably disposed in the members 30 and 31, respectively, said bolts being formed with a central recess in which is disposed a compression spring 36 adapted to urge said bolts outwardly into locked engagement with the doors 8 and 9, the outer

ends of said springs resting against the closed ends of the members 30 and 31.

Double recesses 37 for the bolts are formed in the edge of each door and with the bolts disposed therein, said doors are firmly held in locked position as shown in Figures 1 and 3 of the drawing. Means have been provided for retracting the bolts 34 and 35 from the recesses 37 upon actuation of the handle 19. The upper side of the bolts 34 and 35 has been formed with a slot 38 and the members 30 and 31 have been formed with a downwardly projecting extension 39 engageable therein. By this construction, as the members 30 and 31 are moved by the links 24 and 25, contact of the projection 39 with the shoulder of the slot 38 will likewise retract the bolts 34 and 35 under the compression of the springs 36 until said bolts are entirely withdrawn from the recesses 37 for releasing the locked doors. The handle 19, as before indicated, is disposed on the interior of the car against the face of the post 10 and as said handle is moved from the position shown in Figure 1 of the drawing to that shown in Figure 2, the rod 13 is moved downwardly in its bearings 11 causing the links 24 and 25 to spread to the position shown in Figure 2 which will move the members 30 and 31 outwardly of the casings 28 and 29. As said members are moved the latch members will also be moved to release the locked doors. The spring 20 will retain the handle 19 in either position until it is again manually actuated.

The latching mechanism above described has been designed for the front and rear doors at one side of the automobile and it is to be understood that a duplicate construction is provided for complementary doors on the other side of the automobile and in accordance with the present invention, means has been provided for simultaneously locking both sets of doors. The lower end of the rod 13 has an arm 40 attached thereto by a suitable means 41, the outer end of said arm being formed with an aperture 42 for receiving a cylindrical rod 43. The rod 43 extends transversely of the automobile and has its other end mounted in an arm 44 complementary to the arm 40. The arm 44 is in turn connected to a rod 45 which extends vertically through the post on the opposite side of the automobile. A latching mechanism similar to that above described is associated with the rod 45 and as is to be readily understood the rods 13 and 45 move simultaneously to control the latching mechanism of each pair of doors. The arms 40 and 44 and the transverse rod 43 may be disposed beneath the floor board of the vehicle or any other desired location.

A means has also been provided for releasing the lock on one of the doors by means of a key and as shown, a cylinder lock 46 is mounted in the outer face of the post 10, said cylinder lock being connected with an arm 47 which is in turn connected with a link 48. The bolt 35 of the front door is formed with a projection 49 provided with a pin 50 disposed in an elongated slot 51 formed in the link 48. Insertion of a key 52 within the cylinder lock 46 and rotating the same will move the arm 47 and the link 48 to disengage the bolt 35 from its recess 37. The lower side of the latch casing 29 and the member 31 has been slotted as indicated at 53 to permit the projection 49 to be moved as the bolt 35 is retracted from the recess 37. After unlocking the one door from the exterior of the car, the handle 19 can be actuated, in the manner previously described, to release the bolts of the other doors.

In order to limit the reciprocatory movement of the rod 13 a pair of stop members 54 which may be in the form of angle brackets, are attached to this rod in spaced relation above and below the intermediate bearing 11, by screws or other suitable fastener means 55. The facing surfaces of the brackets may be advantageously covered with cushioning pads 56. Thus, as shown at Figures 1 and 2, the lower bracket 54 will be brought into contact with the bearing 11 upon elevation of the rod 13 while the upper bracket will abut this bearing when the rod is lowered. Such limitation of the rod movement will preclude undue movement or disconnection of the bolt carrying members 30 and 31.

Also it will be understood, of course, by those skilled in the art that variations in the hereinabove described device involving the substitution of substantial equivalents for the devices described are intended to be comprehended within the spirit of the present invention and that the invention is capable of extended application and is not confined to the exact showing of the drawing nor to the precise construction described and, therefore, such changes and modifications may be made therein as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

What is claimed is:

1. In a device for simultaneously locking all doors of a vehicle from a central point, said vehicle having a hollow post on each side thereof against which the doors fit when in closed position, a vertically extending rod supported centrally of each post, a hollow casing mounted on each post on the interior thereof, locking members slidably disposed in said casings adapted for engagement in a locking recess formed in the edge of the vehicle doors, means for operatively connecting said locking members with said vertical rods, an actuating handle attached to the upper end of one of said rods and disposed on the interior of the vehicle, means connecting the lower ends of said rods whereby actuation of said handle will simultaneously operate said locking members, and an independent key operated means for releasing one of said locking members from the exterior of the vehicle.

2. In a door locking mechanism, a pair of approximately aligned slidable latch members, a reciprocatory rod mounted between and movable in a direction perpendicular to the movement of the latch members, a pair of links pivotally connecting the said latch members with the rod, an arm having one end rockably supported and its opposite end pivotally and slidably connected with the rod, a handle connected with the arm for rocking the same and reciprocating the rod, and an elongated tension spring having one end fixed and the opposite end attached to the pivot connection between the arm and the rod so as to swing across the dead center line through the pivot axes of the arm during movement of the latter to yieldingly hold the said rod in elevated or lowered position.

3. In a door locking mechanism, a bolt guide, a hollow member slidably mounted in the guide, a bolt slidably carried in the said hollow member and projecting from one end thereof, a compression spring yieldingly urging the said bolt to projected position, means for limiting the sliding movement of the bolt, a longitudinally slidable rod movable in a direction perpendicular to the

direction of movement of the bolt carrying member, a link pivotally connecting the said bolt carrying member with the rod for actuating the said member upon longitudinal movement of the rod, means for limiting the reciprocatory movement of the rod, a pivoted arm pivotally and slidably connected with the rod for operating the latter, a handle connected with the arm for swinging the same, and a tension spring connected with the means connecting the arm with the rod acting to yieldingly hold the rod in either of its extreme positions.

JOHN VETTER, JR.