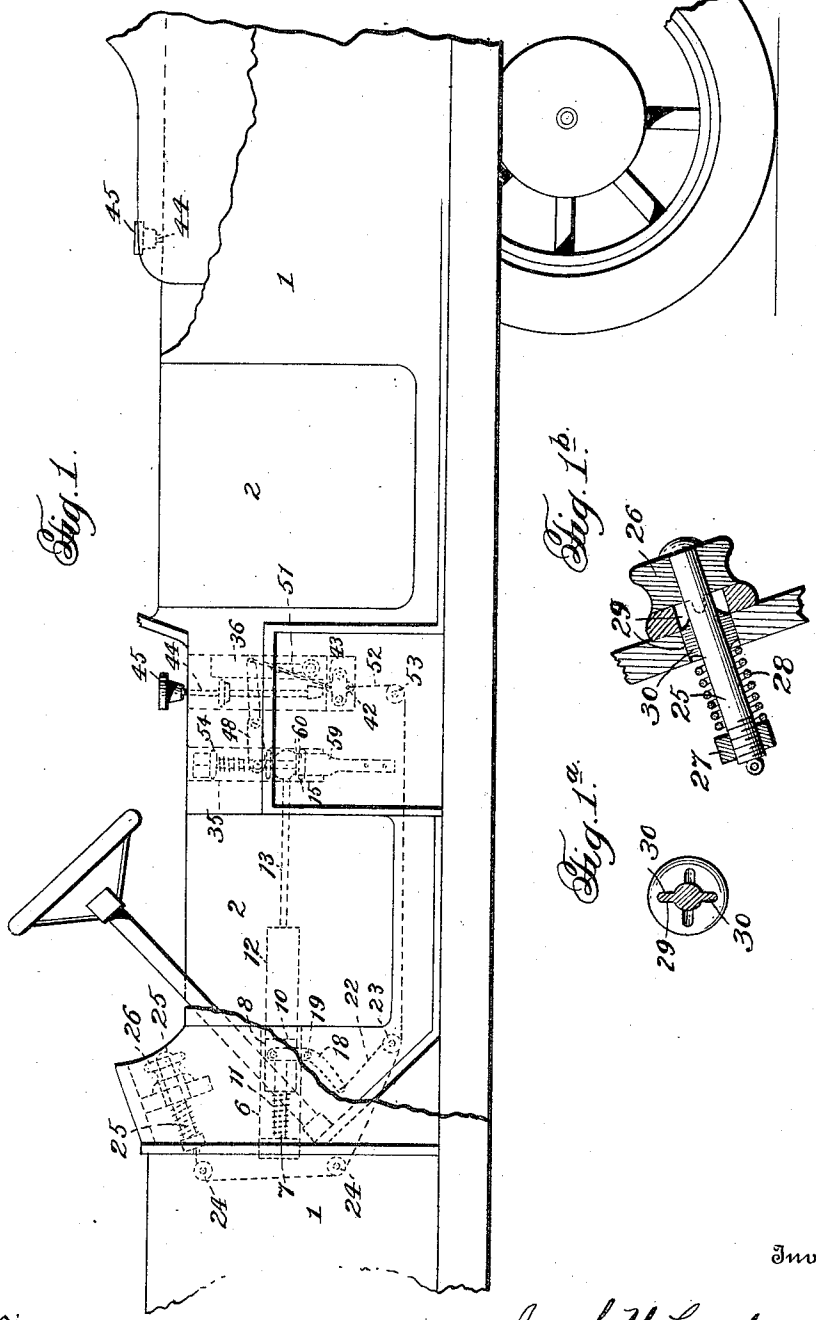
June 19, 1923. 1,459,281

J. U. CARTER

AUTOMOBILE DOOR

Filed Aug. 10, 1920 3 Sheets-Sheet 1



Witness:

Jas. E. Hutchinson.

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Jacob U. Carter,

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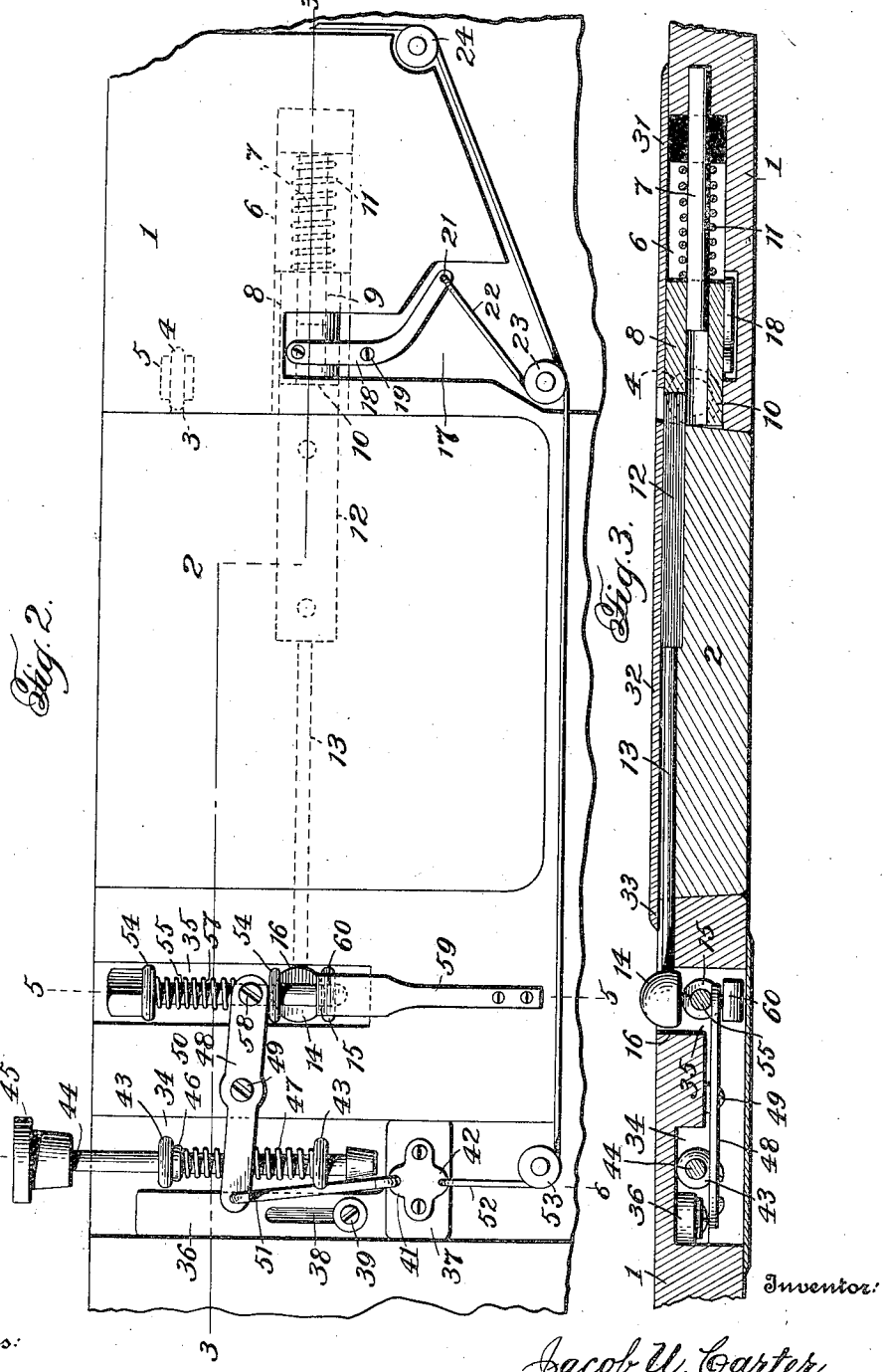
AUTOMOBILE DOOR

Filed Aug. 10, 1920 3 Sheets-Sheet 2



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Filed Aug. 10, 1920 3 Sheets-Sheet 3

Fig. 4.

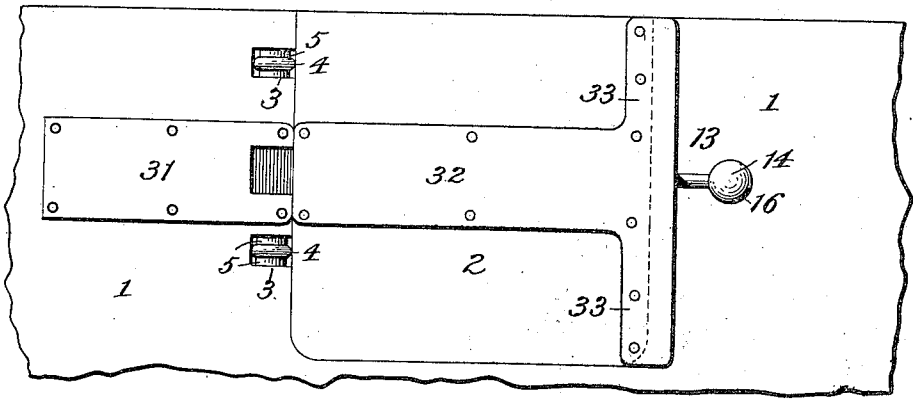


Fig. 5.

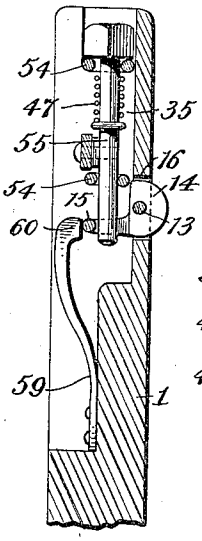


Fig. 6.

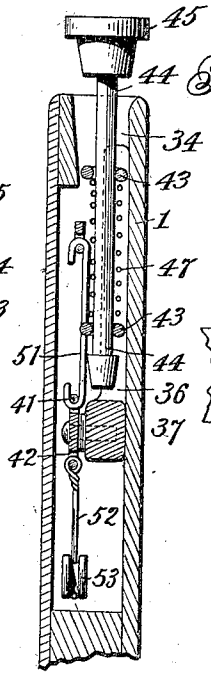
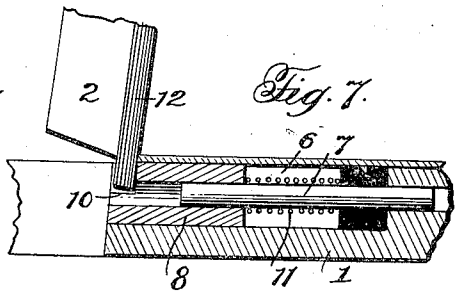


Fig. 7.



Inventor:

Witness:

Jas. E. Hutchinson.

Jacob U. Carter

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Patented June 19, 1923. 1,459,281

UNITED STATES PATENT OFFICE.

JACOB UTLEY CARTER, OF CARDSTON, ALBERTA, CANADA.

AUTOMOBILE DOOR.

Application filed August 10, 1920. Serial No. 402,720.

To all whom it may concern:

Be it known that I, JACOB U. CARTER, a subject of the King of Great Britain, residing at Cardston, Alberta, Canada, have invented certain new and useful Improvements in Automobile Doors, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to new and useful improvements in automobile doors, and more particularly to a lock and releasing mechanism therefor.

The invention has for its principal object the provision of a door lock which may be operated from the driver's seat or by the person desiring to leave or enter the automobile.

A further object consists in the provision of means whereby the door will be slightly opened when the lock is released.

Another object consists in the provision of means whereby the door will be automatically returned to closed position, and means for holding the door in open position when desired.

With the above and other objects in view, my invention consists in the novel details of construction and arrangement of parts which will be more clearly understood from the following specification and drawings, and while I have illustrated and described the preferred embodiment of my invention, it will be understood that such changes may be made as will fall within the scope of the appended claims.

In the drawings:

Figure 1 is a fragmental side elevation with parts broken away.

Figure 1[a] is a horizontal section through the operating rod, showing the hand hold in plan.

Figure 1[b] is a section through the instrument board and hand hole, showing the operating rod in elevation.

Figure 2 is an enlarged fragmental side elevation with the covering plates removed.

Figure 3 is a longitudinal section on the line 3—3 of Fig. 2.

Figure 4 is an enlarged fragmental side elevation showing that side of the body opposite to that illustrated in Fig. 2.

Figure 5 is a section on the line 5—5 of Figure 2.

Figure 6 is a section on the line 6—6 of Figure 2.

Figure 7 is a horizontal section showing the door-engaging plunger.

The automobile body is indicated at 1 and a door 2 is hinged thereto at 3. While any desired form of hinge may be used, in the present instance I have illustrated the hinge in the form of an eye portion 4, secured to the edge of the door, and receiving in the eye a roller 5 secured within a recess formed in the body. Preferably two hinges will be used for connecting each door to the body.

A recess 6 is formed in the body and extends from the edge of the door opening, adjacent the hinged edge of the door. A rod 7 is received in the recess 6 and has its inner end secured to the body in any desired manner. Slidable on the rod 7 is a plunger 8 having a recess 9 receiving the end of the rod. The outer end of the plunger is formed with a lip or projection 10 and a coil spring 11 surrounds the rod 7 between the recessed end of the plunger and the inner end of the recess 6. Secured to the outer face of the door 2, in a depression formed for the reception thereof, is a plate 12, the outer end of which extends beyond the edge of the door 2 and engages the end of the plunger 8 with the lip or projection 10 of the plunger engaging the under surface thereof. A rod 13 is formed on the inner end of the plate 12, is received in a groove formed in the face of the door, and extends beyond the edge of the door. An enlargement 14 is formed on the end of the rod 13 and is provided with an eye 15 adapted to pass through an opening 16 formed in the body adjacent the edge of the door.

The body is cut away as shown at 17, adjacent the door opening, to receive a lever 18 pivoted at 19. At the upper end the lever 18 is secured to the plunger 8 by a screw or other suitable fastening means. A perforation 21 is formed adjacent the lower end of the lever to receive a cord or wire 22 which passes around a pulley 23 and then upwardly over pulleys 24 and secured to a rod 25 which extends through the instrument board of the automobile. A hand hold 26 is secured to one end of the rod and a nut

27 is secured to the opposite end, a coil spring 28 surrounding the rod between the nut and face of the instrument board.

Notches 29 are formed on opposite sides of the opening in the instrument boards through which the rod 25 passes, to receive oppositely disposed projections 30 formed on the rod. The purpose of these projections 30 in conjunction with the notches 29, will be later described. The recess 6 and cutaway portion 7, in the body, with the parts therein, will be covered by a plate shown at 31 and the plate 12 and rod 13 will be covered by a plate 32 having an enlargement 33 on the end extending beyond the edge of the door, and overlying the adjacent edge of the body.

Vertically extending recesses 34 and 35 are formed in the body, adjacent the free edge of the door, from the upper edge of the body. A sliding bolt 36 is received in the recess 34, has a right-angle extension 37 on the lower end, and an elongated slot 38 intermediate the ends. A pin 39 is secured in the recess 34 and extends through the slot 38 for limiting the movement of the sliding bolt. Secured to the right-angle extension 37 is a plate 40 having perforations 41 and 42 formed adjacent the upper and lower edges, respectively. The purpose of this plate with the perforations will be later described. Vertically spaced eyes 43 are secured in the recess 34 and form a guide for a plunger rod 44 having an enlarged head 45 on the upper end. A collar 46 is formed on the rod 44 and the under face thereof is adapted to be engaged by the upper end of a coil spring 47, the lower end of which engages the top of the lower guide eye 43. The lower end of the rod 44 is adapted to overlie the right-angle projection 37 of the slide bolt 36.

A lever 48 is pivotally connected at 49, to the space 50 between the vertical recesses 34 and 35, and one end of this lever is connected to the plate 40, of the sliding ball 36, by means of a rod 51 which is hook-shaped at each end. The upper hooked end passes through an opening adjacent the end of the lever and the lower hooked end engages through the perforation 41 in the plate 40. A cord or wire 52 is connected in the perforation 42 of the plate 40, passes over a pulley 53, and the opposite end is secured to the cord or wire 22 previously described.

Secured within the recess 35 are vertically spaced eyes 54 which form a guide for a sliding rod 55 having a collar 56 formed intermediate its ends. A coil spring 57 surrounds this rod between the collar and uppermost eye 54. The lower end of the sliding rod is adapted to pass through the eye 15, formed on the end of the rod 13, when said eye 15 is passed through the opening 16 in the automobile body. The lever 48 is pivotally connected to the sliding rod 55 at 58.

A flat spring 59 is secured in the recess 35 and is provided on its upper end with a right-angle extension 60 adapted to engage the eye 15, on the rod 13, when it is extended through the opening 16 in the body. When the door is closed, the spring will be placed under tension so that when the sliding rod 55 is raised the spring will force the eye through the opening 16 and thereby slightly open the door. The right angle extension 60 will hold the rod 55 raised when the door is opened, thereby allowing the eye to pass beneath the end of the rod when closing.

With the above detailed description in mind it is thought that the advantages and operation of my improvements will be clearly understood. Although I have only illustrated the invention as applied to a single door of the automobile, it will be understood that it is applicable to all four doors and any one of the doors may be operated by the driver or the individual doors may be operated by the persons entering or leaving the automobile through that particular door. It will be understood that when all four doors are equipped with my improvements there will necessarily be four of the operating rods 25, with their associated parts, and these may be arranged on the instrument board in easy reach of the driver. When an individual desires to operate a particular door for entering or alighting they will press upon the head 45 on the plunger rod 44 which will be lowered and place the spring 47 under compression and at the same time the end of the rod will engage the right angle extension 37 of the sliding bolt 36 and lower the same. The movement of the sliding bolt 36 through the lever 48 and connecting rod 51 will raise the sliding rod 55, against the action of the spring 57, and disengage the end of the rod 55 from the eye 15 carried by the door rod 13. When thus disengaged the door may be readily opened and in opening will force the plunger 8 rearwardly against the action of the coiled spring 11. When the door is released the coil spring 11, with the plunger 8, will automatically close the door. If the door is opened to such an extent that it will be slightly beyond right angle the plunger 8 and spring 11 will hold the door in open position. When the door is to be opened by the driver he will grasp the hand hold 26 of the rod 25 and pull the same towards him. This will pull upon the cords or wires 22 and 53 which freely slide over the various pulleys. The wire or cord 22 will operate the lever 18 to force the plunger 8 back against the action of the spring 11 and this will relieve pressure on the hinged edge of the door so that the door may be easily

swung open. Pulling upon the cord or wire 52 will lower the sliding bolt 36 which in turn will operate the lever 48 to operate the sliding rod 55 to release the door. If the driver desires to retain the parts in unlocked position he will turn the rod 25 so that the projections 30 will be out of alignment with the notches 29 and they will therefore engage against the face of the instrument board to hold the rod in its pulled out position. In practice, the cord or wire 22 will be of such a length, with respect to the cord or wire 52, that the lever 18 will be operated slightly in advance of the sliding plunger 36. As previously stated, the flat spring 59 will slightly open the door when the sliding bolt 55 is raised and disengaged from the eye 15. The opening is accomplished by the spring 59 bearing on the eye 15.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination with an automobile body having a door hinged thereto, a lock for securing the door, means adjacent the door for releasing the lock, means for releasing the lock from a distant point, and means for holding the lock in released position.

2. In combination with an automobile body having a door hinged thereto, a lock for securing the door, means adjacent the door for releasing the lock to open the door, means for releasing the lock from a distant point, and means for automatically closing the door.

3. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to engage the eye, a sliding bolt carried by the body, means connecting the sliding bolt and sliding rod, and means for operating the sliding bolt for disengaging the sliding rod from the eye.

4. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to engage the eye, a sliding bolt carried by the body, a pivoted lever connecting the sliding bolt and sliding rod, and means for operating the sliding bolt for disengaging the sliding rod from the eye.

5. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to engage the eye, a sliding bolt carried by the body, means connecting the sliding bolt and sliding rod, and a spring-pressed sliding rod for operating the sliding bolt for disengaging the first-mentioned sliding rod from the eye.

6. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to engage the eye, a sliding bolt carried by the body and having a right angle extension thereon, a pivoted lever connecting the sliding rod and bolt, and a spring-pressed sliding rod adapted to engage the right angle extension on the sliding bolt for operating and releasing the first mentioned sliding rod from the eye on the door.

7. In combination with an automobile body having a door hinged thereto, a sliding rod carried by the body and adapted to engage the door, a sliding bolt carried by the body, a pivoted lever connecting the sliding rod and sliding bolt, and means adjacent the door for operating the sliding bolt from a distant point.

8. In combination with an automobile body having a door hinged thereto, a sliding rod carried by the body and adapted to engage the door, a sliding bolt carried by the body, a pivoted lever connecting the sliding rod and sliding bolt, a sliding rod adjacent the door for operating the sliding bolt, and means connected to the sliding bolt for operating the same from a distant point.

9. In combination with an automobile body having a door hinged thereto, a sliding rod carried by the body and adapted to engage the door, a sliding bolt carried by the body and provided with a right angle extension, a pivoted lever connecting the sliding rod and sliding bolt, a spring-pressed rod adjacent the door for engaging the right angle extension for operating the bolt to release the first mentioned rod from the door, and means connected to the right angle extension for operating the bolt from a distant point.

10. In combination with an automobile body having a door hinged thereto, means for automatically closing the door, said means comprising a spring-pressed sliding plunger adapted to engage the hinged edge of the door and close the same by an outward movement of the plunger.

11. In combination with an automobile body having a door hinged thereto, a spring-pressed plunger carried in a recess formed in the body and adapted to normally engage the hinged edge of the door, and means for sliding the plunger to remove pressure from the door.

12. In combination with an automobile body having a door hinged thereto, a spring-pressed plunger carried in a recess formed in the body and adapted to normally engage the hinged edge of the door, a lever pivoted to the body and connected to the plunger, and means connected to the lever for operating the plunger to relieve pressure from the door.

13. In combination with an automobile body having a door hinged thereto, a plate secured to the door and extending beyond the hinged edge of the door, a spring-

pressed plunger carried in a recess formed in the body and adapted to engage the end of the plate secured to the door, and means for operating the plunger to relieve pressure from the end of the plate.

14. In combination with an automobile body having a door hinged thereto, a sliding rod carried by the body and adapted to engage the door, a sliding bolt carried by the body, a pivoted lever connecting the sliding rod and sliding bolt, a spring-pressed sliding plunger carried by the body and adapted to engage the hinged edge of the door, and means for simultaneously operating the sliding bolt to release the sliding rod from the door, and sliding plunger for releasing pressure from the edge of the door.

15. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to be engaged in the eye, means for releasing the sliding rod from the eye, and a spring normally engaging the eye to open the door upon the release of the sliding rod.

16. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to be engaged in the eye, means for releasing the sliding rod from the eye, and a spring provided with a right angle extension normally engaging the eye to open the door upon the release of the sliding rod, said right angle extension engaging beneath the end of the sliding rod when the door is opened.

17. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to be engaged by the eye, means for releasing the sliding rod from the eye, and means engageable beneath the sliding rod for holding the same in raised position.

18. In combination with an automobile body having a door hinged thereto, an eye secured to the door, a sliding rod carried by the body and adapted to be engaged by the eye, means for releasing the sliding rod from the eye, and means normally engaged by the eye to slightly open the door upon the release of the rod from the eye and to engage beneath the end of the rod to hold the same in released position.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JACOB UTLEY CARTER.

Witnesses:

ZEBULON WILLIAM JACOBS,

DORA JACOBS.