March 26, 1935. E. R. LANDRY 1,995,889

SAFETY DEVICE FOR CONVEYANCES

Filed Dec. 30, 1933 2 Sheets-Sheet 1

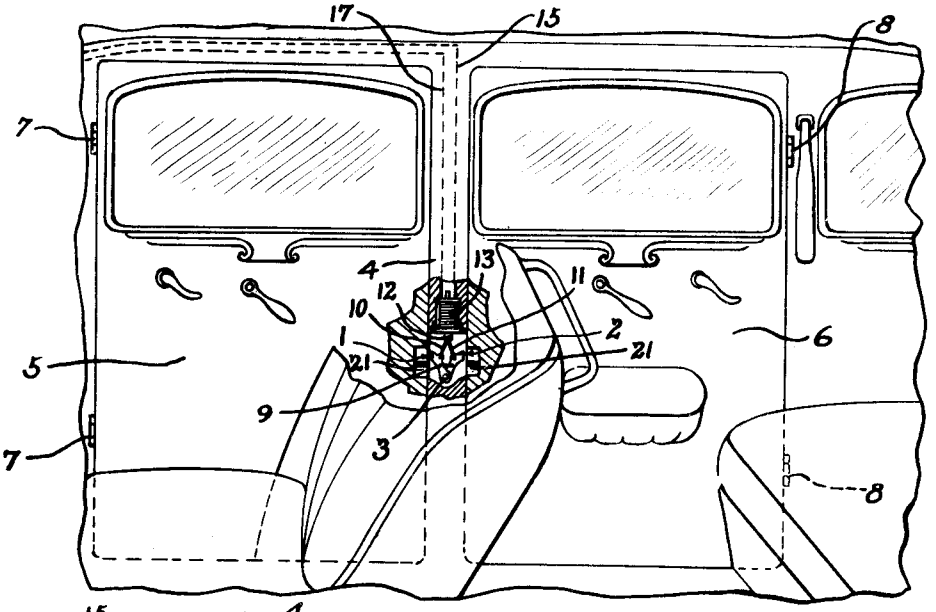


Fig. I

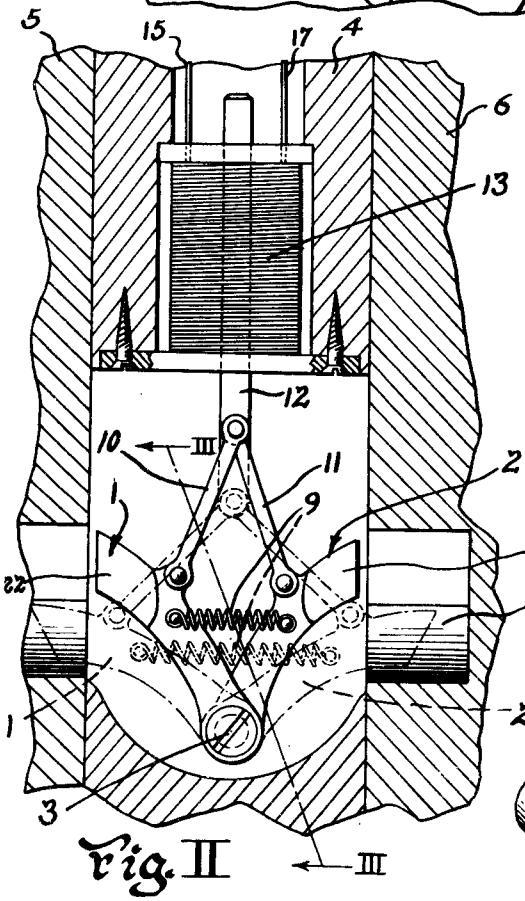


Fig. II

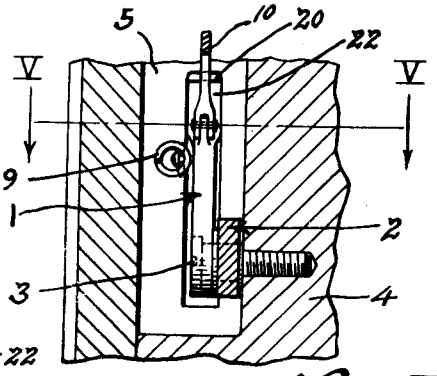


Fig. III

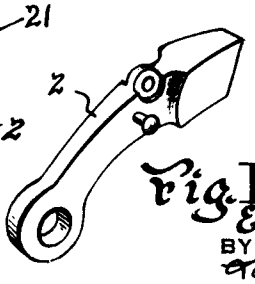


Fig. IV

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SAFETY DEVICE FOR CONVEYANCES

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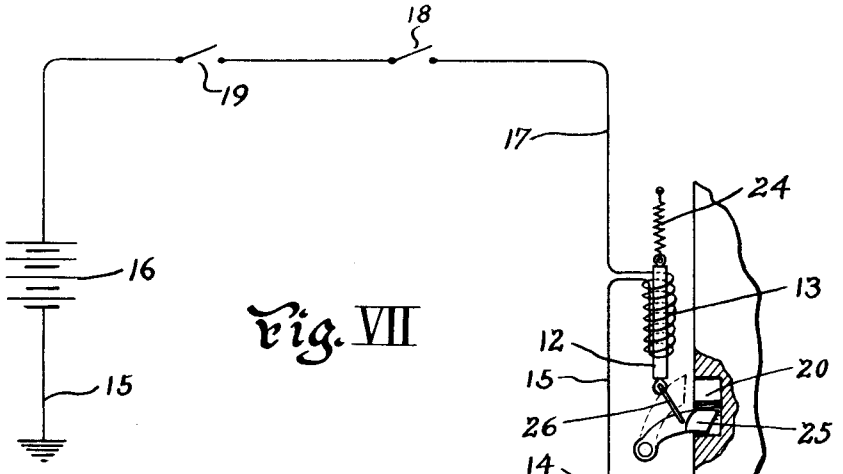


Fig. VII

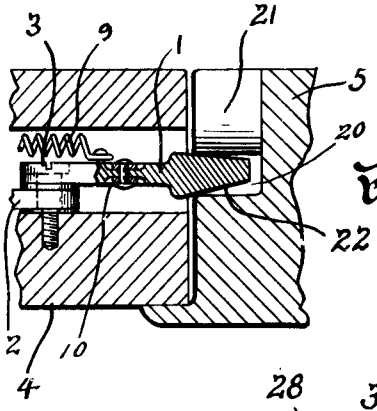


Fig. V

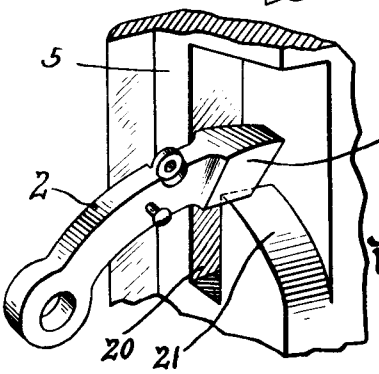


Fig. VI

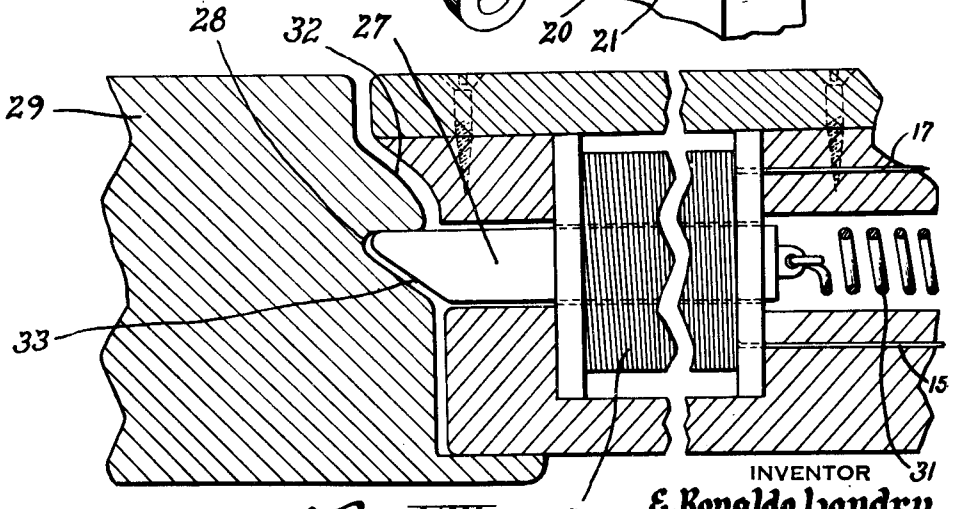


Fig. VIII

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SAFETY DEVICE FOR CONVEYANCES

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Application December 30, 1933, Serial No. 704,779

5 Claims. (Cl. 70—50)

This invention relates to improvements in safety devices and has particular reference to improved means and method of locking the doors of conveyances.

One of the principal objects of the invention is to provide improved means and method of locking the doors of passenger conveyances such as automobiles, aeroplanes or other devices when they are in motion or when their operating mechanism is in action.

Another object is to provide means operable by the ignition switch of motor operated conveyance for locking the doors of such conveyances when they are in motion or when their motors are in motion.

Another object is to provide combined mechanically and electrically operated lock means for locking the doors of devices of the above character.

Another object is to provide improved means and method of making a lock member which may be operated by remote control.

Another object is to provide simple, efficient, and economical means and methods of accomplishing all of the objects and advantages of the invention.

Other objects and advantages of the invention will become apparent from the follcwing description taken in connection with the accompanying drawings, and it will be apparent that many changes and modifications in the arrangement and construction of parts and methods shown and described may be made without departing from the spirit of the invention as expressed in the accompanying claims. I, therefore, do not wish to be limited to the exact details of construction, arrangement of parts, and methods shown and described, as the preferred forms only have been shown by way of illustration.

Referring to the drawings:

Fig. I is a fragmentary view of the interior of an automobile showing a portion thereof in section and illustrating one embodiment of my invention;

Fig. II is an enlarged view of the improved device shown in Fig. I;

Fig. III is a fragmentary sectional view taken on line III—III of Fig. II;

Fig. IV is a perspective view of one of the latch members of the improved device;

Fig. V is a sectional view taken on line V—V of Fig. III;

Fig. VI is a fragmentary perspective view of one of the latch members in cooperative relation with the latch engaging means on the door;

Fig. VII is a schematic view of the wiring system and showing a modified form of the invention; and

Fig. VIII is a sectional view of another modified form of the invention.

Many serious accidents have occurred in the past in having passengers attempt to get in or out of conveyances when they are in motion or when the operator is about to start the conveyance. Such accidents have also occurred when an infant or other passenger accidentally opens a door when the conveyance is in motion. Therefore, it is one of the primary objects of this invention to provide novel means and method of preventing such accidents by providing automatic means for locking the doors of conveyances when they are in motion or when their operating mechanism is in motion, which means will be under the direct control of the operator and operating mechanism.

Referring more particularly to the drawings wherein like characters of reference designate like parts throughout the several views, one of the devices embodying the invention, as shown in Figs. I to VI inclusive, comprises a pair of latch members 1 and 2 pivoted at 3 to the door framing 4 of a conveyance. The conveyance, as shown in Fig. I, is an automobile having two doors 5 and 6 hinged at 7 and 8 to open from their sides adjacent the framing 4 in the usual manner. The latches 1 and 2 are connected by a spring member 9 which is adapted to constantly urge them toward each other about the pivot 3. The said latches are connected by pivoted link members 10 and 11 to the core 12 of an electro-magnet or solenoid 13 mounted in the framing 4, and are adapted to be operated by the movement of said core. The electro-magnet or solenoid is of the usual prior art type having a coil which is connected or grounded to the main frame of the conveyance in a manner similar to the structure shown diagrammatically in Fig. VII, that is, the coil is grounded to the frame as illustrated at 14 by the lead wire 15. The frame is in turn connected to one pole of a battery or other source of electricity 16, as shown in Fig. VII. The opposite end of the coil is connected by the lead wire 17 to the opposite pole of the battery. The lead wire 17 is provided with a make and break switch 18 which in most instances is closed and with another switch member 19 which operates automatically when the ignition is turned on or off. The ignition switch is adapted to energize or deenergize the electromagnet or solenoid 13 which, in the structure shown in Fig. I, operates

the core 12 to move the latch members 1 and 2 into locked or unlocked relation with the doors.

When the ignition switch is turned on the solenoid core is moved to force the latches into locked relation with the doors, and when the ignition switch is turned off the spring member 9 draws the said latch members back to unlocked position. If, when the ignition is turned on and the doors are locked, it is desired to unlock the doors without turning off the ignition switch 19, the operator can do so by opening the switch 18 to deenergize the solenoid. This, of course, is under the control of the operator and gives him constant knowledge of what is taking place.

The latches 1 and 2 when in locked relation with the doors engage in a slot 20 in each door, as shown in Figs. I, II, V, VI, and VII.

The doors are each provided with a cam member 21 adjacent the slots 20 which, if the latch members are in locked position under the action of the solenoid core when the doors are opened, will permit the said doors to be closed without injuring said latch members. When being closed, the cam members on the doors are adapted to force the latch members upwardly against the action of the solenoid, wherein continued movement of the doors will cause the latch members to move into alignment with the slots 20 wherein they will be urged under the action of the solenoid into said slots.

The electro-magnet or solenoid is so designed that it will hold the latch members in locked position against the tension of the spring member 9 so that when the electro-magnet or solenoid is deenergized the spring member 9 will function to move the said latch members to unlocked position. This is clearly illustrated in Fig. II, wherein the latch members are shown by the full lines when in unlocked position and by the dot and dash lines when in locked position.

The latch members are formed preferably with tapered ends 22 which fit within the slots 20 in the doors. This is to cause the parts to fit in snug relation with each other and to prevent looseness and play when the conveyance is in motion.

In Fig. VII there is shown a lock having a single latch member. In this instance the solenoid core 12 is provided with a spring member 24 which is of such a nature as to permit the core to be moved under the magnetic action of the electromagnet or solenoid 13, and when the said electro-magnet or solenoid is deenergized, will retract the core and lift the latches 25 out of the slots 20, it being understood that this lifting action takes place through the link 26 by which the latch is connected to the core. The device otherwise is similar to that described above in connection with Figs. I and II.

In Fig. VIII there is shown a further modification wherein the core 27 acts as the latch and engages the lock means or slot 28 of the door 29. The core 27 is moved by the action of the electro-magnet or solenoid 30 into locked relation with the door and is moved to unlocked position by a spring member 31 in a manner similar to that shown in Fig. VII.

It is apparent that although applicant has shown and described the locking mechanism as being carried by the framing of the doors, it may be carried by the doors themselves if desired, it being simply necessary to provide electrical contact means of some known type to permit the opening and closing of the doors and to complete the electrical lock operating circuits when the doors are in closed position.

Attention is directed to the fact that the door illustrated in Fig. VIII is provided with a cam face 32 which engages a cam face 33 on the solenoid core or latch member 27. This is to permit the door 29 to be closed if by chance the said door is open when the core is moved to locked position under the action of the solenoid or electro-magnet 30. It is to be understood that the solenoids or electro-magnets are in all instances of such a nature that the cores may be forced against the action of the magnetism of the electro-magnets or solenoids without injury thereto. This is to permit closing the doors should they be open when the latch members are moved to locked position.

The method of operation is as follows:

After the passengers have gotton on or off the conveyance and the ignition switch 19 is turned on in the usual manner to start the motor, the said switch automatically energizes the electro-magnets or solenoids and causes them to move the latch members into locked relation with the doors. This automatically locks all of the doors of the conveyance and prevents the possibility of some one getting in or out of the conveyance when it is about to start or when it is in motion. This arrangement also prevents the accidental opening of a door by an infant or other passenger when the conveyance is in motion, and thereby obviates the danger of their accidentally falling out and becoming injured.

The electro-magnets or solenoids function continually to hold the latch members in locked relation with the doors when the ignition switch 19 is turned on, but may be deenergized if desired without shutting off the ignition by opening the switch 18. This, of course, is under the control of the operator and enables him to know what is taking place before the conveyance is put in motion.

By simply shutting off the ignition switch 19 all of the doors of the conveyance will be unlocked simultaneously. This is brought about by deenergizing the electro-magnets or solenoids 13 and allowing the spring members 9, 24, or 31, as the case may be, to lift the latch members from engagement with the interlocking means on the doors.

From the foregoing description it will be seen that I have provided simple, efficient, and economical means and methods of obtaining all of the objects and advantages of the invention, particularly that of providing means operable by the operator or by the operating mechanism of a conveyance for locking the doors when the said conveyance is in motion or when its operating mechanism is in motion.

Having described my invention, I claim:

1. In a device of the character described a pair of door members and a framing between said door members, said framing and door members each having slotted portions in co-operative relation with each other, a pair of latch members coaxially pivoted on the side wall of the slot in the framing and each having an end adapted to be moved into and out of the opposed adjacent slots in the doors, a solenoid mounted in the slot in the framing having a plunger movable towards and away from the latch members, separate link members coaxially pivoted adjacent one end thereof to the plunger and separately pivoted adjacent their opposite ends to each of the latch members intermediate the ends of said latch

members and adapted to move the ends of said latch members into and out of the slots in the doors when the solenoid plunger is reciprocated, spring means connected adjacent its opposite ends to each of the latch members adapted to constantly urge the said latch members towards each other to normally hold the ends thereof out of the slots in the doors, means for energizing the solenoid and means associated with the energizing means for controlling the energizing and deenergizing of the solenoid to lock and unlock the doors.

2. In a device of the character described a door member and a framing associated with said door member, said framing and door member each having slotted portions in cooperative relation with each other, a latch member pivoted adjacent one of its ends to the side wall of the slot in the framing and having an end adapted to be moved into and out of the adjacent slot in the door, a solenoid mounted in the slot in the framing having a plunger movable towards and away from the latch member, a separate link member pivoted adjacent one end thereof to the plunger and adjacent its opposite end to the latch member intermediate the ends of said latch member and adapted to move the said latch member into and out of the slot in the door when the solenoid plunger is reciprocated, spring means connected with the latch member adapted to constantly urge the said latch member and normally hold its ends out of the slot in the door, means for energizing the solenoid and remote control means associated with the energizing means for controlling the energizing and deenergizing of the solenoid to lock and unlock the door.

3. In a device of the character described a pair of door members and a framing between said door members, said framing and door members each having slotted portions in cooperative relation with each other, a pair of latch members coaxially pivoted to the side wall of the slot in the framing and each having an end adapted to be moved into and out of the opposite adjacent slots in the doors, a solenoid mounted in the slot in the framing having a plunger movable towards and away from the latch members, separate link members coaxially pivoted adjacent one end thereof to the plunger and separately pivoted adjacent their opposite ends to each of the latch members intermediate the ends of said latch members and adapted to move the ends of said latch members into and out of the slots in the doors when the solenoid plunger is reciprocated, spring means connected adjacent its opposite ends to each of the latch members adapted to constantly urge the said latch members towards each other to normally hold the ends thereof out of the slots in the doors, means for energizing the solenoid and remote control means associated with the energizing means for controlling the energizing and deenergizing of the solenoid to lock and unlock the doors.

4. In a device of the character described a pair of door members and a framing between said door members, said framing and the adjacent ends of the door members each having slotted portions in cooperative relation with each other, each of said doors having another slot in a side wall thereof communicating with the end slots and each having a cam surface therein, a pair of latch members coaxially pivoted adjacent one end to a single pivot member on the side wall of the slot in the framing and each having an end adapted to be moved into and out of the opposed adjacent end slots in the doors, a solenoid mounted in the slot in the framing having a plunger movable towards and away from the latch members, separate link members coaxially pivoted adjacent one end thereof to the plunger and separately pivoted adjacent their opposite ends to each of the latch members intermediate the ends of said latch members and adapted to move the ends of said latch members into and out of the end slots in the doors when the solenoid plunger is reciprocated, spring means connected adjacent its opposite ends to each of the latch members adapted to constantly urge the said latch members towards each other to normally hold the ends thereof out of the end slots in the doors, means for energizing the solenoid, and remote control means associated with the energizing means for controlling the energizing and deenergizing of the solenoid to lock and unlock the doors, the said cam surfaces being adapted to move the latch members against the action of the solenoid in instances when the solenoid is energized when the doors are open and the said doors are moved to closed position.

5. In a device of the character described a door member and a frame associated with said door member, said framing and the adjacent ends of the door member each having a slotted portion in cooperative relation with each other, the said door member having another slot in a side wall thereof communicating with the end slot and having a cam surface therein, a latch member pivoted adjacent one end to the side wall of the slot in the framing and having its other end movable into and out of the adjacent end slot in the door, a solenoid mounted in the slot in the framing having a plunger movable towards and away from the latch member, a separate link member pivoted adjacent one of its ends to the plunger and pivoted adjacent its opposite end to the latch member intermediate the ends of said latch member and adapted to move the end of the latch member into and out of the end slot in the door when the solenoid plunger is reciprocated, spring means connected to the latch member adapted to constantly urge the said latch member and normally hold its ends out of the end slot in the door, means for energizing the solenoid and remote control means associated with the energizing means for controlling the energizing and deenergizing of the solenoid to lock and unlock the door, the said cam surface being adapted to move the latch member against the action of the solenoid in instances when the solenoid is energized when the door is open and the said door is moved to closed position.

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