

July 28, 1931.

C. J. ULRICH

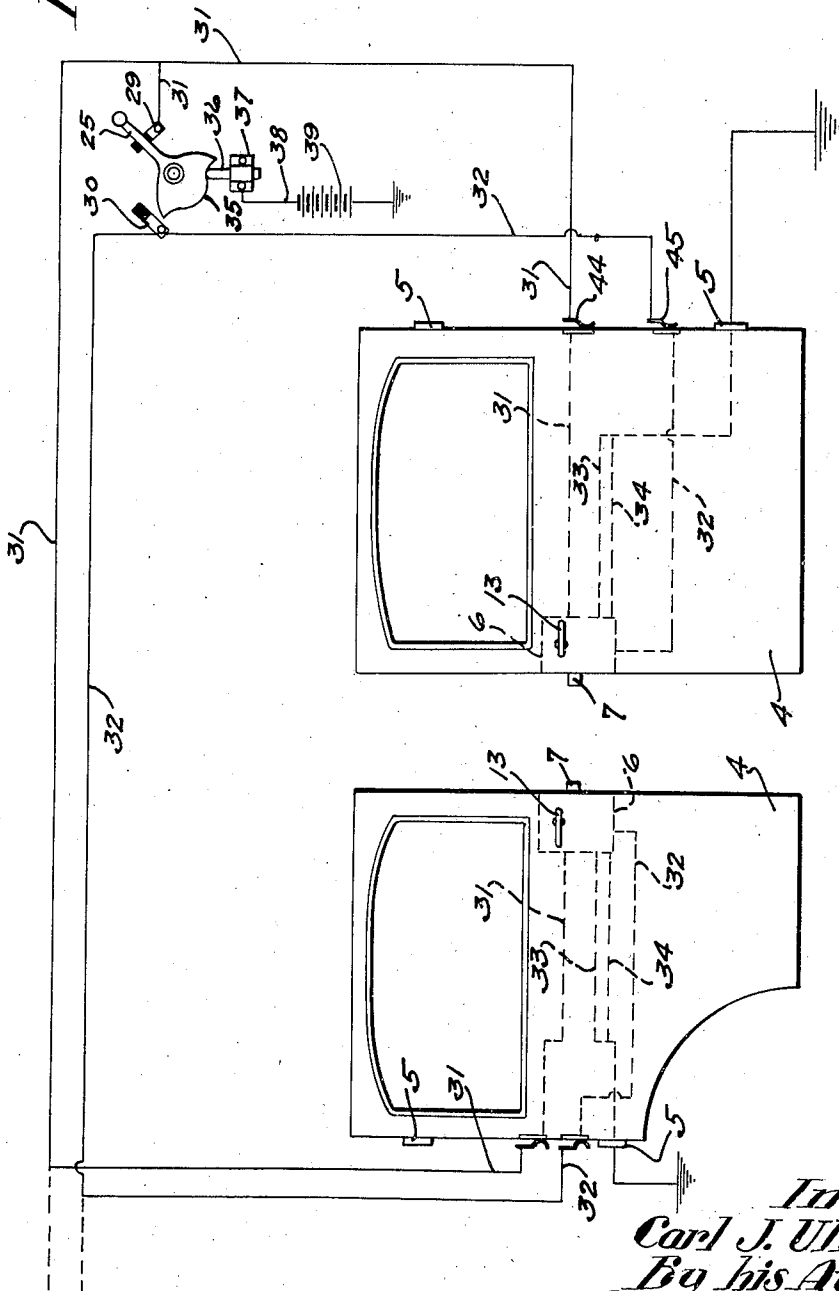
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DOORLOCK ACTUATING MECHANISM

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2 Sheets-Sheet 1

Fig. 1



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Fig. 2

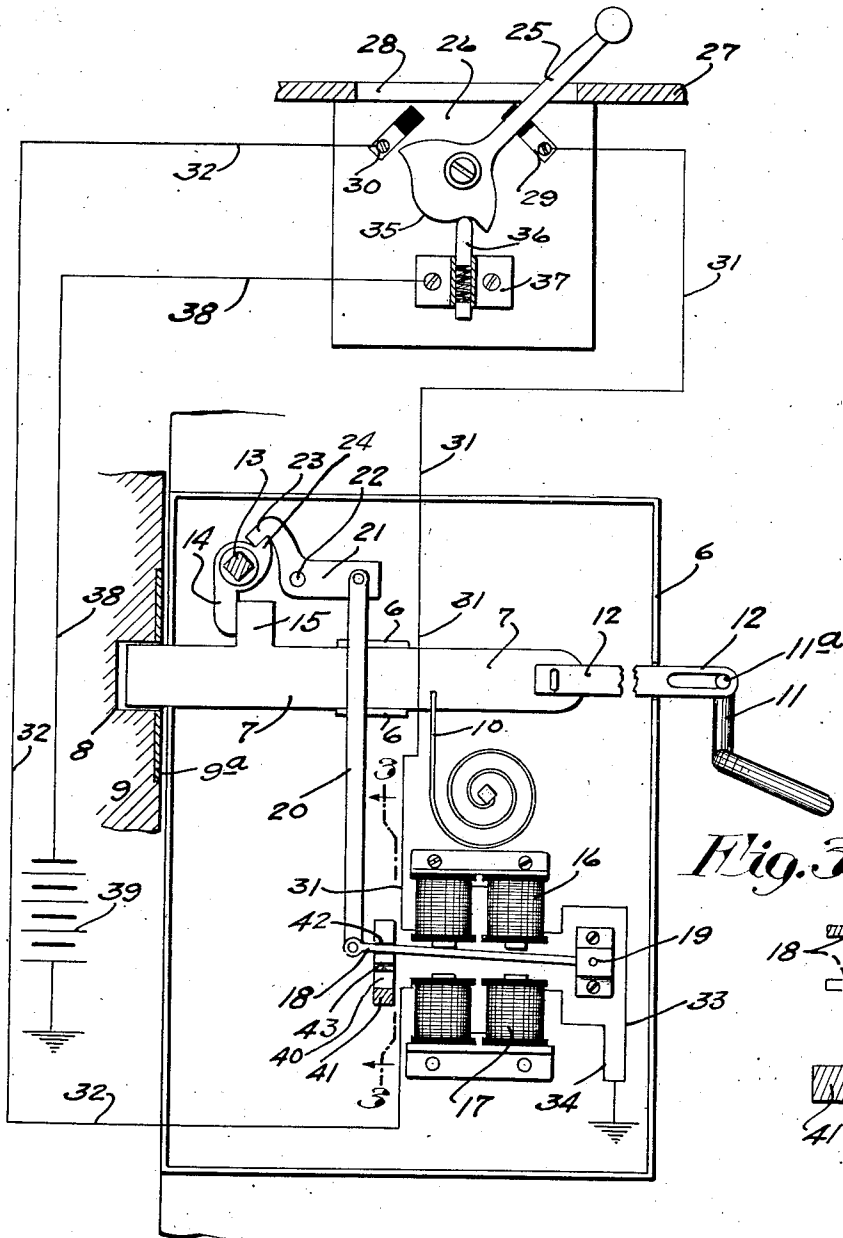


Fig. 3

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UNITED STATES PATENT OFFICE

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DOORLOCK ACTUATING MECHANISM

Application filed January 7, 1929. Serial No. 330,810.

My present invention provides improved means for automatically locking a plurality of doors, and is especially adapted for application to the doors of an automobile. In the application of this invention to an automobile body having four doors, a common controller would be arranged to simultaneously lock three of the doors, to wit: all of the doors except the right-hand front door, which latter would be key-locked in the usual way. The lock controller would be preferably placed on the instrument board where, by a simple manipulation, the two rear doors and the left-hand front door would be simultaneously locked, thereby eliminating the heretofore necessary three operations to accomplish the same general result.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a diagrammatic view showing in side elevation the two doors which may be assumed to be on the left-hand side of the car, looking at the same from the interior of the car;

Fig. 2 is a view partly in elevation and partly in diagram and with some parts removed showing the lock mechanism and the common lock actuator; and

Fig. 3 is a detail in section taken on the line 3—3 of Fig. 2.

The doors of the car are indicated by the numeral 4, the same being hinged in the customary way at 5. The door locks may be of any suitable construction, but, as shown, are of standard construction except as modified for the application of the present invention. Said locks are mounted in casings 6 and are provided with sliding bolts 7 which when projected, engage detents or lock recesses 8 formed in the door jambs 9 and cut through a latch plate 9^a. The lock bolts 7 have the customary beveled outer ends for automatically latching the doors and are spring-pressed outward by springs 10. As shown, these bolts are adapted to be retracted from the inner side of the door by the customary pivoted handles 11 connected to the bolts by links 12. From the outer sides of the doors,

the bolts are adapted to be retracted by the customary handles 13, the stems of which within the lock cases 6 are provided with short arms 14 that are engagable with the lugs 15 on the respective lock bolts. The lock bolts can be retracted by operation of the inside handles without moving the outer handles 13 and conversely the said bolts can be retracted by manipulation of the outer handles without necessarily moving the inner handles 11 due to slot and pin connections 11^a between said handles 11 and links 12. The lock mechanism so far described may be assumed to be that of a standard automobile.

For the application of the improved lock-actuating mechanism, a pair of opposing magnets 16 and 17 are mounted within the lock case 6 and arranged between and subject to action of these magnets is an armature in the form of an arm 18 pivoted to the lock casing at 19. The free end of the arm 18 is connected by a link 20 to one end of a lock dog 21 that is intermediately pivoted to the lock case at 22 and has a lock lug or nose 23 normally engagable with the lock lug 24 on the hub of the arm 14. Obviously, with this construction, the lock bolt 7 can always be retracted by manipulation of the inside handle 11, but cannot be retracted to unlock the door by manipulation of the outside handle as long as the lug 23 of the lock dog 21 is engaged with the lock lug 24. Otherwise stated, it is only by movement of the arm 14 toward the right in respect to Fig. 2 that the lock bolt can be released to open the door and in the position shown by Fig. 2, such movement is prevented by the lock dog. When arm 18 is forced downward, however, lock dog 21 will release itself from lug 24 and then the outside handle of the door can be manipulated to retract the lock bolt and open the door.

As above indicated, there is a common controller for simultaneously actuating the locks of all of the doors except the one that is to be operated by the key-actuated lock. This controller is preferably electro-magnetic and includes the two heretofore noted magnets 16 and 17, but as its primary element it includes a common switch lever 25 mounted on a pro-

jection 26 of the instrument board 27 and working through a slot 28 of the latter.

Associated with the switch lever 25 are two terminal contacts 29 and 30 that are insulated from each other. Contact 29 by a lead 31 is connected to one side of the electro-magnet 16 and contact 30 is connected by a lead 32 to one side of the electro-magnet 17. The other sides of the magnets 26 and 27 are grounded, respectively, through leads 33 and 34. The switch lever 25 is provided on its hub with a cam-acting surface 35 that is engaged by a spring-pressed metallic plunger 36, shown as spring mounted in a bearing 37 suitably connected to or otherwise relatively fixed in respect to the instrument board 27. The bearing 27 which has an electrical conductor, is connected by a lead 38 to a battery 39 which, in practice, may be an ordinary car battery grounded in the customary way.

The spring-pressed plunger 36 performs two functions, to wit: in the first place, it serves as an electrical contact that maintains engagement with the switch lever 25 and, in the second, place, it operates on the cam surface 35 to normally hold the switch lever 25 slightly out of engagement with the contact 29 or 30 with which it has just been engaged by downward pressure.

When the switch lever 25 is engaged with the contact 30, the circuit will be closed through the magnet 17 and the arm 18 will be drawn downward, thereby moving the lock dog 21 into a lock-releasing position. As soon, however, as the lever 25 has been released after thus closing the circuit, it will by spring-pressed plunger 36, be moved upward and just slightly out of engagement with the contact 30, thereby breaking the circuit so that the current is called upon to operate only for an instant. When lever 25 is moved into engagement with the contact 29, the circuit through the upper magnet 16 will be closed, thereby moving arm 18 upward and moving lock dog 21 into its locking position shown in Fig. 2; and as soon as the lever 25 is then released, it will, by the spring-pressed plunger 36, be moved slightly out of engagement with the contact 29 as shown in Fig. 2, thereby again breaking the circuit.

To yieldingly hold lever 18 in raised or lowered position according to the position in which it may be set when said lever is not subject to either electro-magnet, there is provided a yielding retainer in the form of a flat leaf spring 40 shown as secured at one end to a block 41 on the lock casing, see Figs. 2 and 3. This spring retainer 40 is provided with two indentations 42 and 43, the former of which yieldingly holds said lever in a raised position and the latter of which yieldingly holds the same in a lowered position. Of course, the electro-magnets will overcome the spring retainer 40 and move the lever when one or the other of said magnets are energized.

Attention is now called to the fact that electrical connections between leads on the door and the leads on the body of the automobile are made as follows:

Leads 31 are connected through contacts 44 that are engaged when the doors are closed. Leads 32 are connected through contacts 45 that are engaged when the doors are closed and the leads 33 and 34 are grounded through certain of the door hinges 5.

With the above described lock-actuated mechanism, by the simplest kind of a manipulation, the operator can lock all of the doors of the car except the one door before leaving the car and, of course, when the last door is locked with the key, access to the actuating mechanism is cut off. Also the three doors can be instantly released by a simple movement of the switch lever 25 when the persons reenters the car. The device is extremely simple, highly efficient, and very convenient and reliable in its action.

What I claim is:

1. The combination with a plurality of doors equipped with locks having retractable lock bolts and outside and inside bolt-retracting handles of lock dogs for securing said outside handles in non-turnable positions, and a common controller having connections for a simultaneously releasing said lock dogs and for simultaneously setting the same so that the door lock bolts cannot be manipulated by means of the outside handles.

2. A plurality of doors, locks applied to said doors, said locks having retractable lock bolts and outside and inside bolt-retracting handles, the latter of which will operate when the former are secured against bolt-retracting movement, lock dogs operative to hold said outer handles against bolt-releasing movement, co-operating armature-acting members having connections for moving said dogs into operative and inoperative positions, two opposed classes of magnets operating on said armature-connecting members to impart reverse movements thereto, and a divided circuit including said opposed electro-magnets, and a common switch movable into one position to close the circuits through one class of said magnets and into another position to close the circuits through the other class of said magnets.

3. The structure defined in claim 2 in further combination with yielding means normally holding said switch in circuit-opening position.

4. The structure defined in claim 1 in which said common controller has opposing electro-magnets for action on the several lock dogs, and circuit connections to said magnets having a common controlling switch.

In testimony whereof I affix my signature.
CARL J. ULRICH.