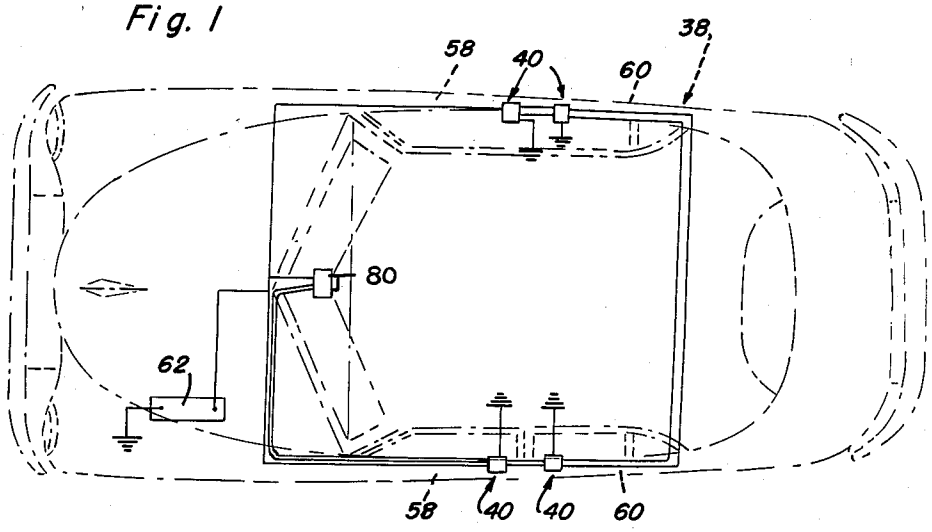
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AUTOMOBILE DOOR LOCK OPERATOR

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Fig. 1



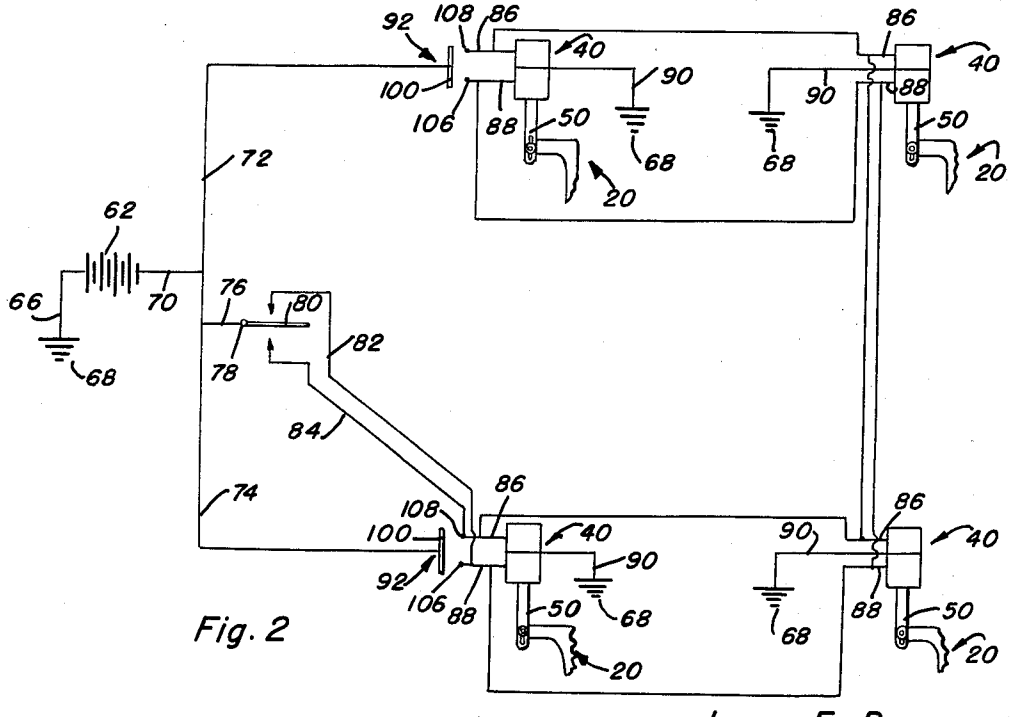


Fig. 2

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Fig. 3

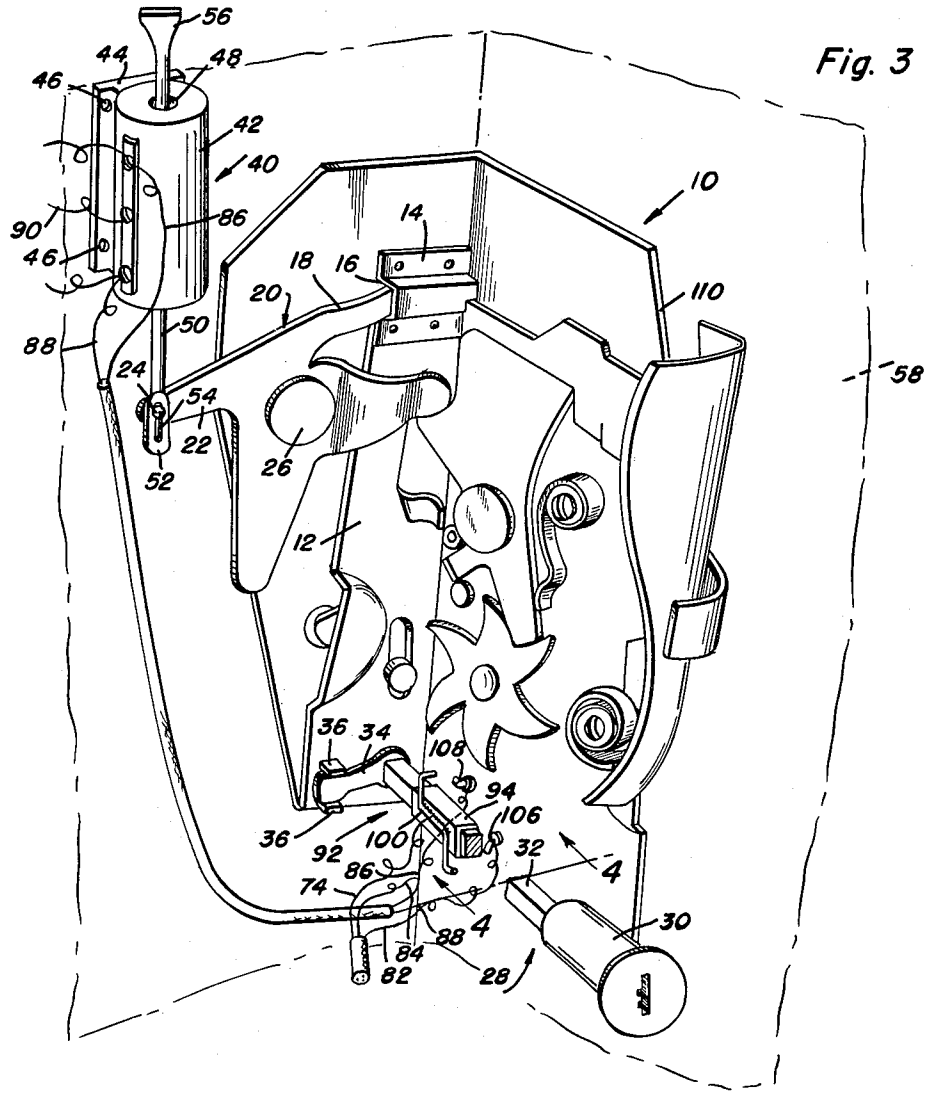
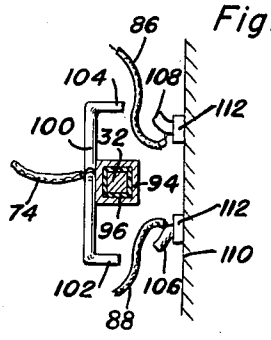


Fig. 4



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AUTOMOBILE DOOR LOCK OPERATOR

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Application August 18, 1952, Serial No. 305,028

1 Claim. (Cl. 70—263)

This invention relates in general to lock mechanisms, and more specifically to means for operating automobile door locks.

The primary object of this invention is to provide an improved mechanism for operating automobile door locks whereby the doors of a vehicle may be simultaneously locked.

Another object of this invention is to provide an improved operator for automobile door locks, said operator being in the form of an electrical system which may be operated from a remote point.

Another object of this invention is to provide an improved automobile door lock operator which may be utilized for simultaneously locking doors of a vehicle, said operator being attachable to conventional latch mechanisms of vehicles now on the market.

A further object of this invention is to provide an improved door lock operator which is controlled by a key lock of a vehicle for simultaneously locking and unlocking the other doors of the vehicle.

With these objects definitely in view, this invention resides in certain novel features of construction, combination and arrangement of elements and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claim, and illustrated in the accompanying drawings which form a material part of this application and in which:

Figure 1 is a top plan view of a conventional vehicle having four doors, the vehicle being shown in dotted lines and a system for simultaneously locking and unlocking the doors of the same being shown in solid lines;

Figure 2 is a wiring diagram of the means for simultaneously operating the locks of the doors of the vehicle in Figure 1;

Figure 3 is an enlarged fragmentary perspective view of a latch mechanism for one of the front doors of the vehicle of Figure 1 and shows the relationship of a portion of the lock operator for simultaneously locking the doors of the vehicle; and

Figure 4 is an enlarged fragmentary transverse vertical sectional view taken substantially upon the plane indicated by the section line 4—4 and shows the construction of the control switch mounted on a key operated shaft for the lock of the vehicle door latch of Figure 3.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the different views of the drawings.

Referring now to the drawings in detail, it will be seen that there is illustrated in Figure 3 a conventional vehicle door latch construction which is referred to in general by the reference numeral **10**. It will be understood that the latch construction **10** is of a type commonly found in modern vehicles and does not in itself form a part of this invention. Another form of suitable latch mechanism is disclosed in a patent to John H. Roethel, 2,499,-111 patented February 28, 1950.

The door latch mechanism **10** includes a lock whose major element is in the form of a slide **12** mounted for

vertical movement and adapted to prevent actuation of the latch of the latch mechanism. The upper end of the slide **12** is provided with a generally channel shaped element **14** which in combination with the slide **12** forms a sleeve **16** in which is disposed arm **18** of a lever **20** for actuating the slide **12**. The lever **20** also includes a second arm **22** which is provided with adjacent its extreme outer end a pin **24**. The pin **24** is normally attached to one end of a rod controlled by a push button extending up through the window sill of an associated door. It will be seen that when the pin **24** is raised the lever **20** is pivoted about its associated pivot pin **26** and the arm **18** moves downwardly to lower the slide **12**.

The latch mechanism **10** is specifically designed for use on front doors of a vehicle and includes a key operated lock operator mechanism which is referred to in general by the reference numeral **28**. The lock operator mechanism **28** includes a key operated tumbler **30** which has associated therewith a horizontal key operated shaft **32**. Mounted on the inner end of the key operated shaft **32** is a crank arm **34** whose feed end is disposed between a pair of lugs **36** struck from the bottom portion of the slide **12**. It will be seen that rotation of the key operated shaft **32** will result in the vertical movement of the slide **12** to lock and unlock the latch of the latch mechanism.

The above described latch mechanism is conventional and is in no way a part of this invention.

It will be understood that the rear doors of a vehicle will be provided with a latch mechanism similar to the latch mechanism **10** with the exception of the key operated mechanism **28**.

The push button and its associated rods for actuating the lever **20**, which has not been illustrated, is removed from each door of a vehicle, such as the vehicle **38** illustrated in Figure 1 and is replaced by an electronic device in the form of an electro-magnetic device which is referred to in general by the reference numeral **40**. The electro-magnetic device **40** includes a cylindrical bore **42** which has secured thereto a mounting plate **44** which may be secured to the interior of a vehicle door by conventional fasteners passing through apertures **46** therein. The cylindrical core **42** is provided with a central bore **48** in which is mounted for vertical movement an elongated plunger **50**. The lower end of the plunger **50** is flattened as at **52** and provided with an elongated slot **54** in which is received the pin **24**. The upper end of the plunger **50** is provided with an enlarged head forming a push button **56** whereby the plunger **50** may be manually operated.

Inasmuch as the plunger **50** of the electro-magnetic device **40** may be reciprocated in a vertical plane by either manually controlling the same or by the magnetic attraction of cylindrical core **42**, it will be seen that the lever **20** may be actuated to lock or unlock the door latch mechanism **10** as desired.

Referring now to Figure 1 in particular, it will be seen that the vehicle **38** includes a pair of front doors **58** and a pair of rear doors **60**. Each of the front and rear doors **58** and **60** is provided with an electro-magnetic device **40** which operates in the manner described above. The vehicle **38** also includes a battery **62** which is utilized for energizing the electro-magnetic devices **40**. The energization of the electro-magnetic devices **40** is controlled by a switch **80** mounted in series with the battery **62** and positioned at a desired location within the vehicle **38**.

Referring now to Figure 2 in particular, it will be seen that there is illustrated a wiring diagram which includes the battery **62** which has one terminal connected by a ground wire **66** to a ground **68**, the ground in the case of the vehicle **38** being its frame and body construction. Connected to the other terminal of the battery **62**

in a wire 70 which branches off into wires 72 and 74 which extend in opposite directions around the sides of the vehicle 38, and their purpose will be explained in more detail hereinafter. Connected to the wire 74 is a wire 76 whose other end is connected to a central terminal 78 of a double-throw switch 80. Associated with the switch 80 of wires 82 and 84 whose opposite ends are connected to leads 86 and 88, respectively, one of the electro-magnetic devices 40. The other electro-magnetic devices 40 are connected in parallel with the first electro-magnetic device 40 by suitable wiring which will not be explained in detail.

It will be understood that the electro-magnetic device 40 is of the reversable type whereby when current is applied to one of its leads the plunger 50 associated therewith is urged outwardly and when current is connected to the other of its leads the plunger 50 is urged downwardly. Due to this novel construction, the movement of the plunger 50 may be controlled by the double-throw switch 80 which may selectively supply current to either of the leads of the electro-magnetic device. The electro-magnetic device 40 is also provided with a ground wire 90 which is connected to the ground 68.

It will be understood that the double-throw switch 80 is also provided with a neutral position whereby the electro-magnetic devices 40 are energized only temporarily to move the plungers 50 to their desired positions. Once the switch 80 has been returned to its neutral position, the individual electro-magnetic devices 40 may have their plungers 50 moved to a desired position for the individual operation of locking of the latch mechanism 10 of an associated door.

In order that the electro-magnetic devices 40 of the automobile door lock operator, which is the subject of this invention, may be also controlled by the key operated lock mechanism 28 of the front doors 58 of the vehicle 38, the key actuated shaft 32 of each of the mechanisms 28 is provided with a switch construction which is referred to in general by the reference numeral 92. The switch construction 92 includes an elongated sleeve 94 mounted on the key operated shaft 32 and insulated therefrom by insulation 96. Mounted on each of the sleeves 94 is a double-ended elongated movable contact member 100 extending along said sleeve 94. The contact 100 is provided with contacts 102 and 104 on opposite ends thereof which extend vertically from opposite sides of the shaft 32 and which are adapted to be engaged with fixed contacts 106 and 108, vertically spaced above and below the shaft 32 respectively. The fixed contacts 106 and 108 are mounted in vertically spaced relation on a mounting bracket 110 of the door lock mechanism 10 and is insulated therefrom by insulated bushings 112.

Referring now to Figure 2 in particular, it will be seen that the wire 72 is connected to the switch mechanism 92 of one of the doors and that the bar 74 is connected to the switch mechanism 92 of the other of the doors on the front portion of the vehicle 38. The wires 72 and 74 are connected to the double ended contact member 100 of their respective switch mechanisms 92 and the fixed contacts 106 and 108 are connected to the lead wires 88 and 86, respectively, of their respective electro-magnetic device 40.

Inasmuch as the double-ended contact member 100 of the switch structure 92 is connected to one lead of the battery 62, when the key operated shaft 32 is rotated in a clockwise direction, as viewed in Figure 3, to raise the slide 12, the contact 104 will engage the fixed contact 108 and current will be supplied to the leads 86 of the electro-magnetic devices 40 with the result that the plungers 50 thereof are urged downwardly. Due to this connection, when one of the front doors 58 is locked the remainder of the doors of the vehicle 58 will also be locked by action of their respective electro-magnetic devices 40.

It will be seen that when the key operated shaft 32 is rotated in a counter-clockwise direction, as viewed in Figure 3, the contact 102 of the movable contact member 100 will engage the fixed contact 106 with the result that current will be supplied to the leads 88 of the electro-magnetic devices 40. In this manner the unlocking of one of the front doors of the vehicle 38 will also result in the unlocking of the remainder of the doors.

In view of the foregoing, it will be seen that with the automobile door lock operator, which is the subject of this invention, the locking of the doors of the vehicle 38 may be controlled from the interior thereof by the double-throw switch 80 with the result that accidental opening of the doors will be greatly reduced. Also, it will be seen that inasmuch as all of the doors of the vehicle 38 are locked upon the locking of any one of the same by its key operated lock, a possibility of accidentally leaving one of the doors of the vehicle locked will be eliminated.

The operation of this device will be understood from the foregoing description of the details thereof, taken in connection with the above recited objects and drawings. Further description would appear to be unnecessary.

Minor modifications of the device, varying in minor details from the embodiment of the device illustrated and described here, may be resorted to without departure from the spirit and scope of this invention, as defined in the appended claim.

Having described the invention, what is claimed as new is:

A lock control system for vehicle doors having a latch controlled by a lock mechanism which is selectively actuated by a plunger and a key operated lock, said system comprising an electronic device for attachment to the plungers of a lock mechanism for vehicle door latches, control means for simultaneously actuating said electronic devices to simultaneously actuate the plungers of the lock mechanism of said door latches, said control means being in the form of an elongated movable contact member mounted on and insulated from a key operated horizontal shaft and extending along said shaft and provided with vertical end contacts extending from opposite sides of said shaft, and a pair of vertically spaced contacts carried by a door latch above and below said shaft, respectively, and selectively engageable by said end contacts.

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