Feb. 20, 1962 F. R. WEYMOUTH, JR 3,021,912

VEHICLE DOOR LOCKING SYSTEM

Filed Feb. 25, 1960 2 Sheets-Sheet 1

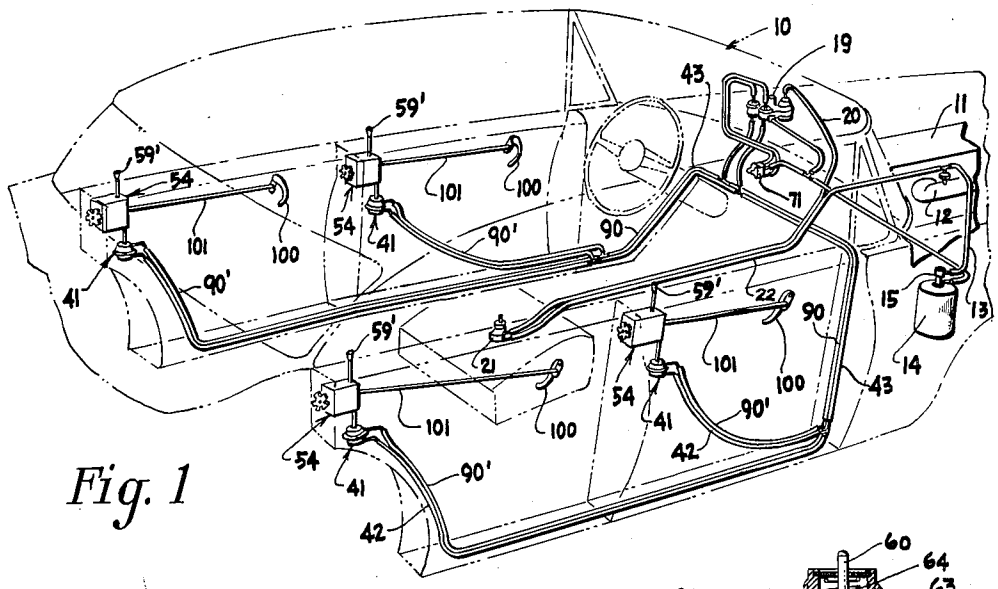


Fig. 1

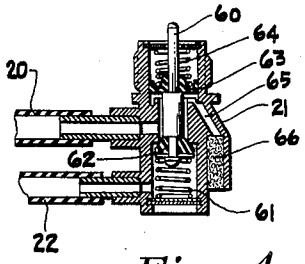


Fig. 4

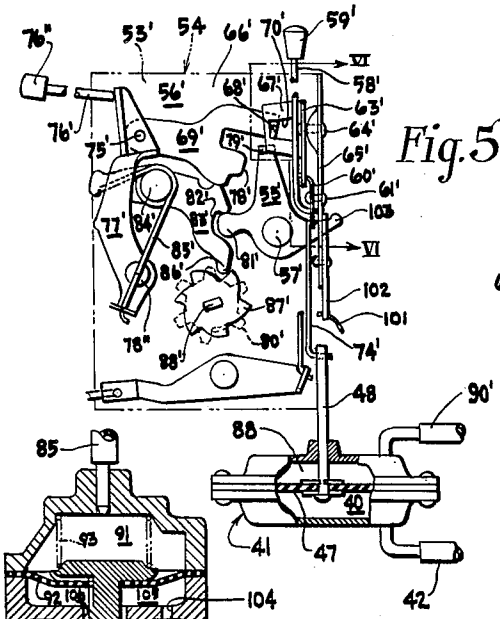


Fig. 5

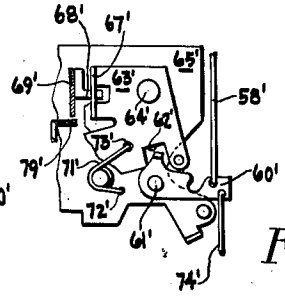


Fig. 6

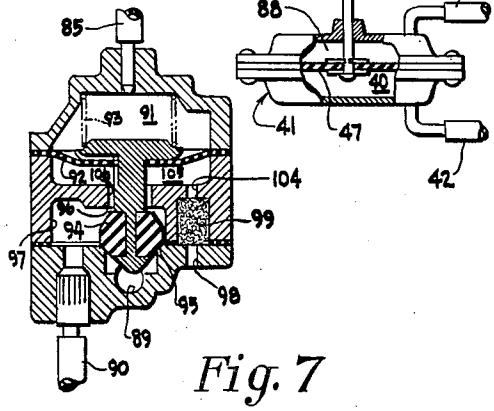


Fig. 7

INVENTOR.
FREDERICK R. WEYMOUTH JR.
BY
Bean Brooks Buckley & Bean
ATTORNEYS

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Fig. 3

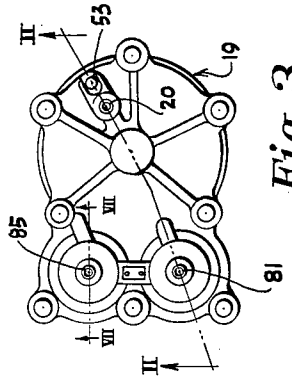


Fig. 2

INVENTOR.
FREDERICK R. WEYMOUTH JR.
BY
Beam Brooks Buckley & Beam.
ATTORNEYS

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VEHICLE DOOR LOCKING SYSTEM

Frederick R. Weymouth, Jr., Buffalo, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

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6 Claims. (Cl. 180—82)

The present invention relates to an improved automatic door locking system which maintains the doors of an automotive vehicle locked against unauthorized intrusion after the vehicle is placed in operation, and more particularly, to an improved control arrangement for such a system.

In automatic door locking arrangements which lock the vehicle doors against unauthorized intrusion, it is desirable that the vehicle doors be locked immediately upon the starting of the vehicle engine, without any requirement for deliberate thought on the part of the vehicle operator. It is also desirable that the doors also be automatically relocked during continued operation of the vehicle, in the event that the vehicle is stopped and the door opened from within the vehicle while the vehicle engine remains in operation. Furthermore, in the interest of avoiding inconvenience and discomfort to the vehicle operator it is desirable for the vehicle operator to be able to actuate the door locks from a remote position in order to permit a passenger to enter the vehicle or to permit locking of the doors when the vehicle is at a standstill. It is with the providing of an improved control or distributor valve in a system for obtaining the above results that the present invention is concerned.

It is accordingly the primary object of the present invention to provide an improved fluid pressure actuated control or distributor valve which will automatically lock all the vehicle doors incidental to the starting of the vehicle, and also cause these doors to be automatically relocked during continued operation of the vehicle in the event that the doors were unlocked from within the vehicle.

Another object of the present invention is to provide an improved distributor valve which operates in response to a pressure differential and therefore causes automatic door locking when such differential pressure is experienced regardless of the absolute value of the pressure of the fluid which is used to actuate the control valve, the valve therefore being capable of functioning equally well at all altitudes in which the vehicle operates.

A further object of the present invention is to provide an improved distributor valve for an automatic door locking system including an arrangement for controlling the sensitivity thereof so that its operational characteristics may be calibrated for providing the best operation of the particular installation with which it is associated.

Still another object of the present invention is to provide a control or distributor valve which is simple in construction, efficient in operation, and capable of being easily manufactured. Other objects and attendant advantages of the present invention will readily be perceived hereafter.

In accordance with the present invention the improved distributor valve is adapted to form a part of an automatic door locking system for an automotive vehicle wherein prompt positive locking of the vehicle doors is obtained incidental to the starting of the vehicle or incidental to the continued operation thereof after the vehicle doors have been opened and closed while the vehicle engine remains in operation. In accordance with the present system, the plurality of vehicle doors are each provided with a latch lock having a motor operatively coupled thereto. The improved central distributor or control valve, which is made in accordance with the present invention, is coupled to the engine intake manifold, and when this central distributor valve senses an increase in manifold vacuum on starting of the vehicle, the valve will permit a source of energy, in this instance vacuum in a reserve tank, to communicate

with the door locking motors for effecting automatic locking of the door locks. After a period of such communication, the central distributor valve automatically terminates this communication, and thus will permit manipulation of the door locks from within the vehicle without interference from the door locking motors. The improved distributor valve operates on a pressure differential principle. More specifically, the valve is essentially divided into first and second chambers by a flexible diaphragm. A spring is arranged to normally bias the diaphragm in a first direction. When the manifold vacuum communicates with the first chamber, the diaphragm is deflected against the bias of said biasing means, and the diaphragm opens a valve attached thereto which permits the above-noted communication between the source of energy and the door locking motors. The second chamber is in communication with the first chamber by means of a metering conduit. Thus the high manifold vacuum which is experienced in the first chamber is experienced later in time in the second chamber. In other words, there is a time delay between the evacuation of the first chamber and the second chamber. After the second chamber is evacuated, there will be an equalization of pressures in the chambers on both sides of the diaphragm and the biasing means will return the central distributor valve to a position wherein it terminates communication between the door locking motors and the energy source. It will readily be appreciated that the operation of the central distributor valve is dependent only on differential pressure and therefore the valve will operate equally well under all conditions of atmospheric pressure. More specifically, the valve will operate as well at high altitudes where there is low atmospheric pressure as it will at low altitudes where there is high atmospheric pressure, the reason being that the valve is actuated solely in response to a differential pressure across its diaphragm and does not have to utilize fluid pressure to operate against a biasing means having a constant value. Furthermore, since the valve operates on a differential pressure principle, it is simpler in construction and easier to produce. The above-mentioned metering conduit between the first and second chambers has an adjusting element therein to vary the rate of flow between the chambers. This permits the valve to be adjusted to provide optimum operation of the particular system in which it is installed.

In addition to the above described operation experienced upon starting of the vehicle engine, the improved valve provides automatic relocking of the vehicle doors in the event that they are unlocked while the vehicle engine remains in operation. More specifically, when the improved distributor valve senses a reduction in manifold pressure for a prolonged period, as during acceleration, the pressure within the two chambers will equalize at a relatively low value commensurate with that experienced during acceleration. When an increase in manifold vacuum is experienced after the acceleration has been completed, the differential pressure experienced by the valve between the acceleration pressure and the normal travelling pressure will cause an opening of the valve and the reactuation of the door locking motors with the accompanying automatic door locking. The present invention will be more fully understood when the following portions of the specification are read in conjunction with the accompanying drawings wherein:

FIG. 1 is a fragmentary perspective view of an automotive vehicle containing a door locking system incorporating the improved control or distributor valve of the present invention;

FIG. 2 is a schematic view of the automatic door locking system of the present invention, including a view, partly in cross section, of the improved control or distributor valve taken along line II—II of FIG. 3;

FIG. 3 is a top plan view of the improved distributor or control valve of the present invention;

FIG. 4 is a view, partly in cross section, of a seat valve which is used in the door locking system;

FIG. 5 is a view of the internal mechanism within the door latch locks of the vehicle;

FIG. 6 is a view taken along line VI—VI of FIG. 5; and

FIG. 7 is a view taken along line VII—VII of FIG. 3.

In FIG. 1 automotive vehicle **10** is shown having an engine **11** with the usual intake manifold **12**. In communication with manifold **12** through conduit **13** is a vacuum tank **14** (FIGS. 1 and 2). A check valve **15** having a valve element **16** biased to a closed position by spring **17** is associated with tank **14** to permit the latter to be evacuated during periods of high manifold vacuum, the closing of valve element **16** retaining the vacuum within tank **14** during periods of low manifold vacuum, as is well understood in the art.

When the vehicle engine is started, there will be automatic locking of the vehicle doors in the following manner: Chamber **18** of control or distributor valve **19** will be evacuated through conduit **20**, seat valve **21**, and conduit **22** because of the vacuum produced by intake manifold **12**. When chamber **18** is evacuated, diaphragm **23** therein will be pulled upwardly against the bias of spring **24** which is interposed between plate **25** and wall **26** of the valve. A valve stem **27** has one end thereof affixed to plate **25** and has poppet valve **28** mounted on the other end thereof. It can thus be seen that the upward movement of diaphragm **23**, in response to the evacuation of chamber **18**, will result in the unseating of poppet valve **28**. This will permit communication between chamber **29** and chamber **18** through valve conduit **30**, valve chamber **31**, and valve conduit **32**. The evacuation of chamber **29** will result in the upward movement of diaphragm **33** against the bias of spring **34**. Mounted on diaphragm **33** is a plate **35** having stem **36** affixed thereto on which is mounted poppet valve **37**. The upward movement of poppet valve **37** from its lower seat **38** to its upper seat **39** will permit communication between chamber **40** of door locking motor **41** and vacuum tank **14** through conduit **42**, conduit **43**, valve chamber **44** and conduits **89**, **45**, and **46**. The evacuation of chamber **40** will deflect flexible diaphragm **47** downwardly and the accompanying downward movement of shaft **48** attached to diaphragm **47** will result in the locking of the door lock, as explained in detail hereafter.

While chamber **40** of motor **41** is being evacuated in the foregoing manner, there will be communication between valve chamber **18** and valve chamber **49** through valve conduit **50**, metering filter **51** and valve conduit **52**. It will be noted that filter **51** may be compressed by adjusting screw **53**. The denser the metering filter **51**, as determined by the amount of compression thereof by screw **53**, the longer will be the time required for evacuating chamber **49** and vice versa. In other words, valve conduit **50**, filter **51**, and conduits **52** provide a metered flow between chambers **18** and **49**, as determined by the setting of screw **53** which determines the rate at which air will flow through filter **51**, which may consist of felt, matted hair, or the like. It will readily be seen that after the initial evacuation of chamber **18**, chamber **49** will be evacuated to the same extent as chamber **18** after a period of time has elapsed, as determined by the setting of screw **53**. Therefore, since the pressure in both chambers **18** and **49** are equal, spring **24** will expand and move diaphragm **23** downwardly to cause poppet valve **28** to become seated and therefore disrupt communication between valve conduits **31** and **32**.

After poppet valve **28** is closed in the above described manner, chamber **40** of motor **41** will be vented to the atmosphere in the following manner in order that motor **41** will not interfere with manual manipulation of lock **54**. More specifically, chamber **29** of valve **19** will be vented to the atmosphere through conduit **55**, filter **56**, valve conduit **57**, valve chamber **58** and bleed **59** in valve stem **36** and plate **35**. As atmospheric pressure returns to chamber **29**, spring **34** will expand and cause diaphragm **33** to move downwardly thereby causing an accompanying movement of valve stem **36** so that poppet valve **37** will move from its upper seat **39** to its lower seat **38**. Atmosphere will then be able to communicate with chamber **40** of motor **41** through conduit **42**, conduit **43**, chamber **44**, the space surrounding stem **36**, chamber **58**, conduit **57**, filter **56** and conduit **55**. As noted above, when atmospheric pressure returns to chamber **40** of motor **41**, the motor will not provide any interference with normal manual manipulation of lock **54**.

The foregoing action of distributor or control valve **19** is obtained during starting of the vehicle. However, in the event that the vehicle is brought to a stop and its engine is permitted to idle while a passenger opens a door from within the vehicle and leaves and then closes the door behind himself, the subsequent acceleration of the vehicle followed by a driving thereof at a constant or a decreasing speed will result in an automatic relocking action by valve **19** in the following manner: During acceleration there will be a decrease in manifold vacuum. After this decrease has been experienced for a short period of time, it will exist in both chambers **18** and **49** because of the communication of these chambers through conduits **50** and **52** and metering filter **51**, which may be made of matted hair or any other suitable substance. However, when the vehicle ceases to accelerate, there will be an increase in manifold vacuum. This increased vacuum will be experienced first in chamber **18** which will cause diaphragm **23** to rise upwardly against the bias of spring **24** to open poppet valve **28** and thereby permit the above described relocking action to take place through the flow path described above. After the high manifold vacuum is equalized in chambers **18** and **49**, spring **24** will expand and cause poppet valve **28** to be seated, thereby causing communication between motor **41** and vacuum tank **14** through valve **37** to be terminated, as described in specific detail above. Furthermore, the return of poppet valve **37** to its lower seat, as described above, will permit motors **41** to be vented so that the door locks may be manipulated from within the vehicle without interference provided by motors **41**, which would be experienced if they were still under vacuum.

It will be noted that seat valve **21** is in series with conduits **20** and **22** extending between the intake manifold **12** and valve **19**. Seat valve **21** prevents the automatic lock actuation described above in the event that the vehicle engine is started when the driver's seat is not occupied, as by a mechanic starting the engine from underneath the hood. Since the door locking motors **41** cannot be actuated when the operator's seat is unoccupied, a person cannot lock himself out of the vehicle. More specifically, in the foregoing respect valve **21** (FIGS. 1, 2 and 4) is positioned under the driver's seat of the vehicle in such a manner that when the driver occupies the seat, valve stem **60** will be depressed against the bias of spring **61** thereby unseating poppet valve **62** (mounted on valve stem **60**) and permitting communication between conduits **22** and **20** which will permit actuation of valve **19**, as described above. When valve stem **60** is depressed and poppet valve **62** is unseated, valve **63** will be urged downwardly on its seat by spring **64** to prevent conduit **20** from communicating with the atmosphere through valve conduit **65** and filter **66**. This venting is desired when poppet valve **62** is seated because it is desirable to vent chambers **18** and **49** when the driver's seat is unoccupied to place valve **19** in condition for a recycling operation after the driver's seat is subsequently reoccupied, whether the vehicle engine is idling or shut off while the seat is unoccupied. In either event the reduction of pressure within

chambers 18 and 49 in the sequential manner described above will cause the above-described door locking action.

Latch locks 54 operate in the following manner: A bell crank lever 55' is pivotally mounted on housing 56' by a pin 57'. The shaft 58' of a conventional manual door locking and unlocking pin 59' extends through the molding (not shown) of the vehicle door. Shaft 58' is fastened to one end of bell crank lever 60 (FIGS. 5 and 6) which is adapted to pivot about pin 61', the other end of lever 60' fitting within notched recess 62' of link 63'. Link 63' is pivotally mounted on pin 64' which extends from flange 65' positioned at a right angle to plate 66' of housing 56'. As can be seen from FIG. 6, when shaft 58' is depressed, link 63' will pivot in a counterclockwise direction about its pivot pin 64' to cause the portion 67' of link 63' to move downwardly and carry prong 68' of link 69' downwardly with it, prong 68' fitting within the slotted portion 70' of link 63'. It will be noted that a snap-acting spring 71' (FIG. 6) has one end 72' anchored on flange 65' and the other end 73' anchored in link 63'. Thus, when manual locking pin 59' is depressed to a locked condition (either manually or by the action of motor 41), it is the snap spring 71' which maintains link 63' in a locked position after the locking force on motor 41 is removed.

Shaft 48 of fluid pressure motor 41 is coupled to shaft 74' (FIGS. 5 and 6) which is, in turn, coupled to bell crank lever 60'. Thus the downward movement of motor shaft 48 in response to the existence of vacuum in locking chamber 40 of fluid pressure motor 41 will cause the same action caused by a downward movement of shaft 58', namely, a downward movement of the leg of bell crank lever 60' to thereby pivot link 63' to the position shown in FIGS. 5 and 6, as described in detail above.

After link 69' has been pivoted in a clockwise direction about pin 75' in the above-described manner, the movement of pin 76' to the right, as occurs when the outside door handle or button 76'' is manipulated, will cause lever 77' to pivot clockwise about pin 78' and cause link 69' (attached to lever 77' by pin 75') to move to the right in FIG. 5. However, the end 78' of link 69' will not engage flange 79' of bell crank lever 55'. Thus the manipulation of the outside door handle will be ineffective for unlocking the door lock because the movement of link 69' will not cause lever 55' to pivot in a clockwise direction to free latch 80', as described in greater detail hereafter.

It is only after link 69' has been pivoted about pin 75' in a counterclockwise direction from its position shown in FIG. 5 that the end 78' thereof may engage flange 79' when the outside door handle is manipulated. After end 78' of link 69' engages flange 79' of bell crank lever 55' in response to the movement of pin 76' to the right during a door unlatching operation, lever 55' will pivot in a clockwise direction about pin 57' and the leg 81' (of lever 55') which is within the recessed portion 82' of lever 83' will cause the latter to pivot in a counterclockwise direction about its pivot pin 84' against the bias of spring 85'. This, in turn, will cause the tongue 86' of lever 83' to cease engagement with ratchet wheel 87' which is, in turn, coaxially mounted on shaft 88 with the rotary door latch 80'. When the above-described locking arrangement for the rotary door latch 80' is released through the operation of the above-described linkage, latch 80' is free to move relative to the striker plate (not shown) on the door jamb to permit the vehicle door to be pulled to an open position.

It can thus be seen that upon starting or after acceleration of the vehicle the cycling action of valve 19 will cause motor diaphragm 47 to move downwardly with the corresponding locking of lock 54 against opening from outside of the vehicle and that after the locking has been effected, chamber 40 of door locking motor 41 is vented to the atmosphere and that the door locks may be opened from within the vehicle without interference from the door locking motors. More specifically, when inside door handles 100 are manipulated to cause links 101 to move to the right in FIG. 1, the upper end of lever 102 (FIG. 5) will move into the plane of the drawing. This upper end of lever 102 is hooked about end 103 of lever 55'. The clockwise movement of lever 55' will result in the unlatching of lock 54, as described in detail above. It can readily be seen that this unlatching occurs whether link 69' is in a locked position, as shown in FIG. 5, or in an unlocked position, as described above. It will further be seen that the raising of stems 58' of manual door locking pins 59' (FIGS. 5 and 6) will also cause link 69' to assume an unlocked position.

In the event that it is desired to manually lock all of the vehicle door locks from a remote position, it is merely necessary to pivot knob 70 of manual remote control 71 (which may be mounted on the vehicle dashboard) in a clockwise direction about pin 72 to thereby depress valve stem 73 against the bias of spring 74 to unseat poppet valve 75. This will permit communication between vacuum tank 14 and chamber 29 of valve 19 through conduit 46, T 76, conduit 77, nipple 78, valve chambers 79 and 80, and conduit 81. This will raise diaphragm 33 against the bias of spring 34 to permit communication between vacuum tank 14 and chamber 40 of door locking motor 41 thereby causing motors 41 to place locks 54 in a locked condition, as described above.

There are times when it is desired to unlock all of the vehicle door locks from a remote position as when the operator within a vehicle desires to permit passengers to open a door prior to entering the vehicle. When this type of operation is desired, the operator need merely pivot knob 70 in a counterclockwise direction about pin 72 to thereby depress valve stem 82 against the bias of spring 83 to unseat poppet valve 84 mounted on stem 82. This will permit the communication of vacuum tank 14 with conduit 85 through conduit 46, T 76, conduit 77, nipple 78, valve chambers 79 and 86, and nipple 87. Conduit 85 leads to chamber 91 (FIG. 7) of valve 19. When chamber 91 is evacuated, diaphragm 92 will be raised upwardly against the bias of spring 93 and thereby move valve 94 from its lower seat 95 to its upper seat 96. When valve 94 is away from seat 95, there will be communication between vacuum tank 14 and chamber 88 of motor 41 through conduit 46, T 76, conduit 45, valve conduit 89, chamber 97 and conduits 90 and 90'.

It will be noted at this point that upper chamber 88 of motor 41 may be vented to the atmosphere when valve 94 is in its lower position wherein it prevents communication of this chamber with a vacuum source. This venting to the atmosphere is effected through valve conduit 98, filter 99, valve conduit 104, chamber 105, conduit 106 surrounding the valve stem on which valve 94 is mounted, and chamber 97 which is in communication with conduit 90 leading to chamber 88. Furthermore, as described above, when poppet valve 37 is seated on seat 38, lower chamber 40 of motor 41 is vented to the atmosphere. Since the chamber which is not being evacuated is always vented to the atmosphere through the above-described paths, there will be no interference to the desired operation of the valving by the vacuum itself.

When knob 70 is released after either a manual remote locking or unlocking operation, either of the springs biasing the poppet valve which was unseated will expand thereby returning valve 71 to the condition shown in FIG. 2. Subsequently the chamber in direct communication with the hose 81 or 85 leading from the valve will vent to the atmosphere through filter 56 (associated with chamber 29) or a similar filter 99 associated with the chamber 91. This will permit poppet valve 37 or poppet valve 94 to return to their lower seats 38 or 95, respectively, as the above-described venting takes place. Furthermore, as noted above, after poppet valves 37 and 94 return to these positions, the chambers of the motor 41 are

vented to the atmosphere through the above-described paths.

It will readily be appreciated that for effecting an automatic locking operation it is not necessary to utilize the manifold vacuum only as a source of intelligence. Under certain circumstances it may be desirable to permit the manifold vacuum to communicate with the door locking motors directly. In such a situation valve **28** of FIG. 2 would permit communication between door locking motor chamber **40** and conduit **20** instead of merely actuating valve **37** which permits communication between the door locking motor chamber **40** and the vacuum tank, as described above.

As noted above, by varying the setting of adjustment screw **53** the time delay between the evacuation of chambers **18** and **49** of valve **19** may be varied. The advantage of this type of operation is that valves such as **19** may be universally used in different types of installations having different sized motors, different sized conduits, and different intake manifold pressures. In other words, the time delay between the opening and closing of poppet valve **28** may be regulated by adjusting screw **53** to vary the rate of flow through metering filter **51** to thereby permit the adjustment of valve **19** for optimum operation of the system. It will also be appreciated that in lieu of the specific embodiments shown, the metering of flow between chambers **18** and **49** may be effected by an orifice and tapered pin arrangement wherein a tapered pin is formed at the end of a screw such as **53** and is adjustable to vary the effective size of the orifice through which there is fluid flow between the two chambers.

It can thus be seen that the differential acting valve described above and the door locking system in which it is located are manifestly capable of achieving the above enumerated objects, and while preferred embodiments of the invention have been disclosed, it is to be readily understood that the present invention is not limited thereto, but may be otherwise embodied within the scope of the following claims.

What is claimed is:

1. A fluid pressure actuated automatic door locking system for an automotive vehicle having a plurality of doors therein comprising door locking means in each of said doors, fluid pressure motor means operatively coupled to each of said door locking means, a source of fluid pressure, and distributor valve means operatively coupled between said source of fluid pressure and said fluid pressure motor means, said distributor valve means comprising a housing, a diaphragm in said housing dividing said housing into first and second chambers, means for biasing said diaphragm in a first direction, means for causing said source of fluid pressure to communicate with said first chamber to thereby cause said diaphragm to deflect against the bias of said biasing means, valve means adapted to be actuated when said diaphragm is deflected to thereby permit said source of fluid pressure to effect actuation of said door locking motors, and metering means located between said first and second chambers whereby said second chamber will be subjected to the influence of said fluid pressure source later in time than said first chamber to thereby cause said biasing means to return said diaphragm and said valve means to the positions which they occupied before said diaphragm was deflected by the influence of said fluid pressure in said first chamber to thereby cause said valve means to terminate the action of said fluid pressure source which results in actuation of said motor means.

2. A door locking system as set forth in claim 1 wherein said distributor valve means includes vent means for venting said fluid pressure motor means when said valve means are not actuated to thereby permit said door locks to be manually operated from within said vehicle without opposition by said motor means.

3. A control for an automatic door locking system for a vehicle comprising a housing, a diaphragm in said housing dividing said housing into first and second chambers, means for biasing said diaphragm in a first direction, means for causing a source of fluid pressure to communicate with said first chamber to thereby cause said diaphragm to deflect against the bias of said biasing means, energy supplying means for a door locking motor adapted to be actuated when said diaphragm is deflected, and metering means located between said first and second chambers whereby said second chamber will be subjected to the influence of said fluid pressure source later in time than said first chamber to thereby cause said biasing means to return said diaphragm to the position which it occupied before it was deflected by the influence of fluid pressure in said first chamber, the return of said diaphragm to its original position being accompanied by the attendant returning of said energy supply means to a deactuated condition.

4. A fluid pressure control for an automatic door locking system for a vehicle comprising a housing, first and second chambers in said housing, means separating said chambers, means for biasing said chamber separating means in a first direction, means for causing a source of fluid pressure to communicate with said first chamber to thereby cause said separating means to deflect against the bias of said biasing means, energy supplying means for a door locking motor adapted to be actuated when said separating means are deflected, and metering means located between said first and second chambers whereby said second chamber will be subjected to the influence of said fluid pressure source later in time than said first chamber to thereby cause said biasing means to return said separating means to the position which it occupied before it was deflected by the influence of fluid pressure in said first chamber, the return of said separating means to its original position being accompanied by the attendant returning of said energy supplying means to a deactuated condition.

5. A fluid pressure control for an automatic door locking system for a vehicle comprising a housing, a flexible diaphragm dividing a portion of said housing into first and second chambers, spring means biasing said flexible diaphragm in a first direction, first conduit means in communication with said first chamber for permitting a source of fluid pressure to communicate therewith to thereby cause said diaphragm to deflect against the bias of said spring means, valve means coupled to said flexible diaphragm and adapted to be actuated when said flexible diaphragm is deflected, second conduit means for permitting communication between said first and second chambers, metering means in said second conduit means, adjusting means operatively associated with said metering means for selectively varying the rate of fluid flow therethrough, whereby said second chamber is subjected to the influence of said fluid pressure source later in time than said first chamber to thereby cause said biasing means to return said flexible diaphragm and said valve means to the original positions which they occupied before the initial deflection of said flexible diaphragm under the influence of said pressure acting only in said first chamber, and energy supplying means responsive to the actuation of said valve means for supplying energy to door locking motor means and responsive to the returning of said valve means to said original position to terminate the supplying of energy to said door locking motor means.

6. An automatic door locking system for an automotive vehicle having an energy source and a plurality of doors therein comprising door locking means in each of said doors, motor means operatively coupled to each of said door locking means, a source of fluid pressure, and control means operatively coupled to said source of fluid pressure, said control means comprising a housing, first and second chambers in said housing, diaphragm means effectively separating said first and second chambers, means for biasing said diaphragm means in a first direc-

tion, means for causing said source of fluid pressure to communicate with said first chamber to thereby deflect said diaphragm means against the bias of said biasing means, means for energizing said door locking motors from said energy source in response to the deflection of said diaphragm means, and metering means located between said first and second chambers whereby said second chamber will be subjected to the influence of said fluid pressure source later in time than said first chamber to thereby cause said biasing means to return said diaphragm means to the position which it occupied before it was deflected by the influence of said fluid pressure in said first chamber, the return of said diaphragm to its original position being accompanied by the attendant returning of said energizing means to a deactuated condition to thereby terminate communication between said source of energy and said door locking motors.

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