Oct. 11, 1938. J. TOREN 2,132,767

DOOR LOCKING MEANS

Filed Oct. 7, 1936 4 Sheets-Sheet 1

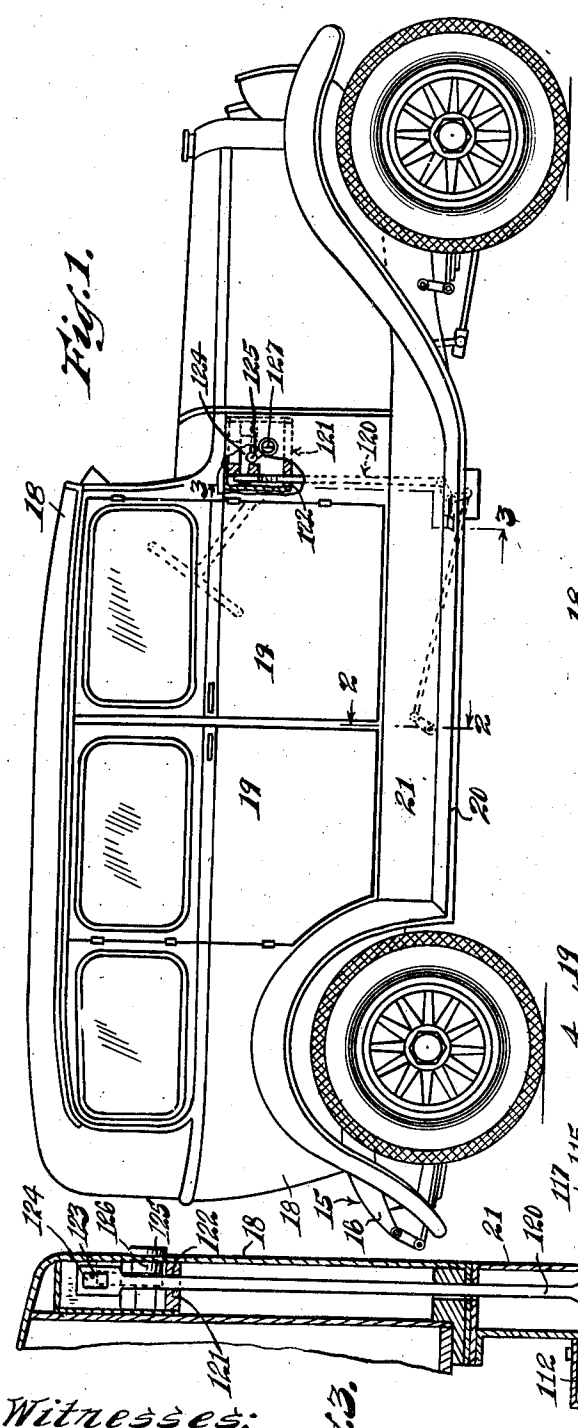


Fig. 1.

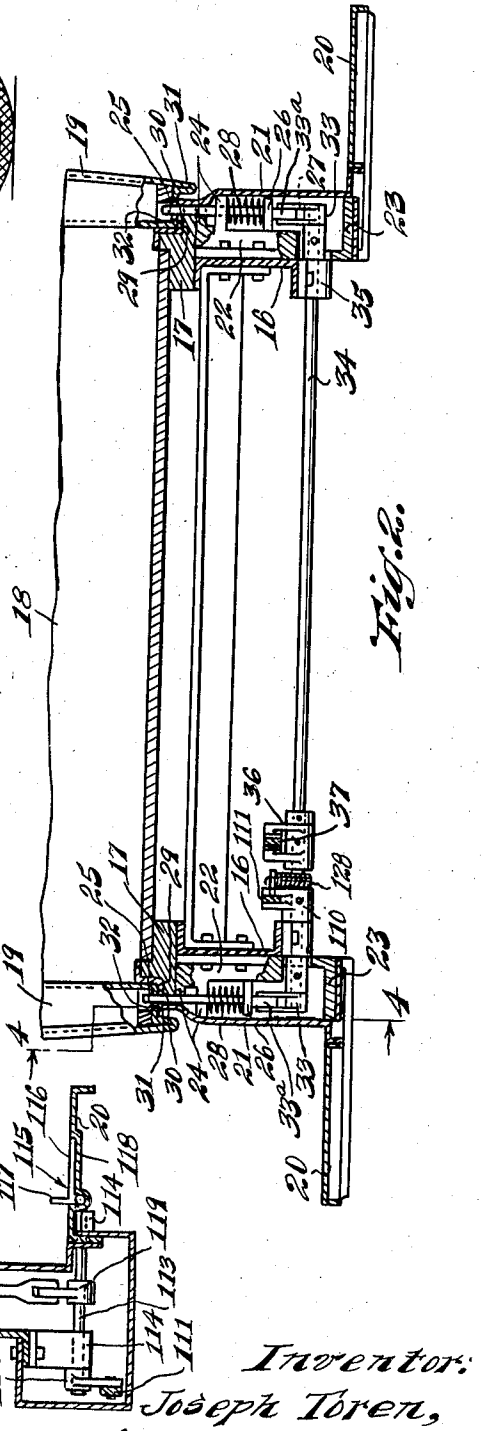


Fig. 2.

Fig. 3.

Witnesses:
E. E. Wessels
Anita E. Matsen

Inventor:
Joseph Toren,
By Joshua R. H. Potts
his Attorney.

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DOOR LOCKING MEANS

Filed Oct. 7, 1936 4 Sheets-Sheet 2

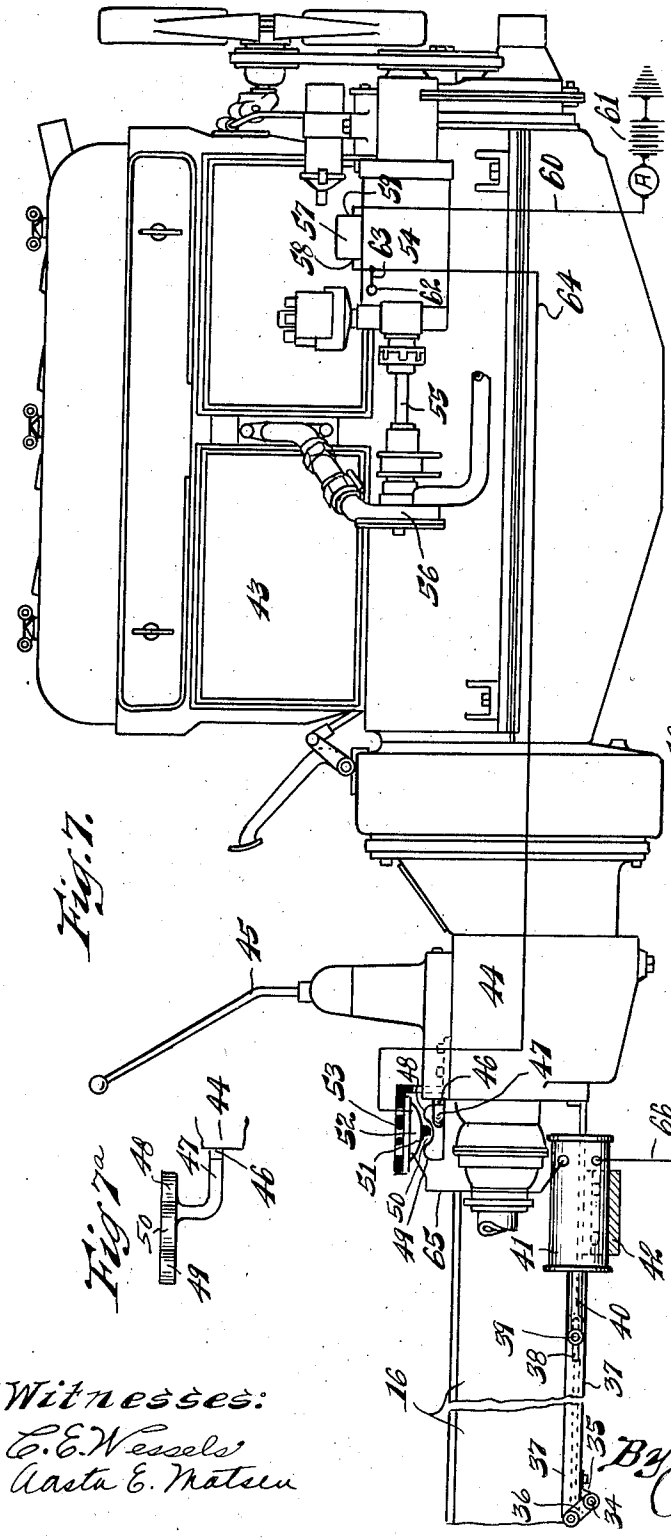


Fig. 7.

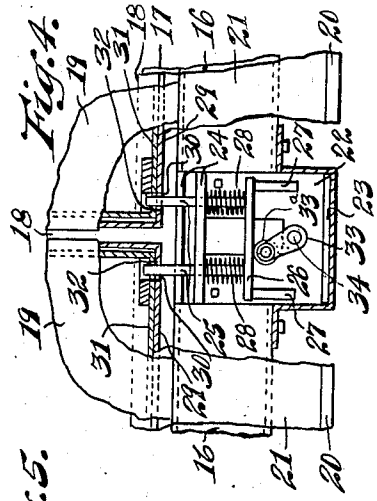


Fig. 4.

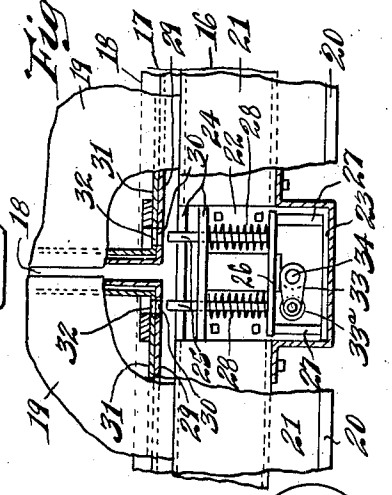


Fig. 5.

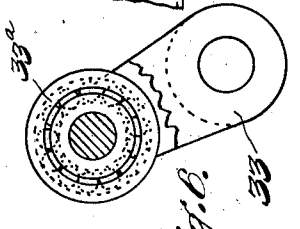


Fig. 6.

Fig. 7a.

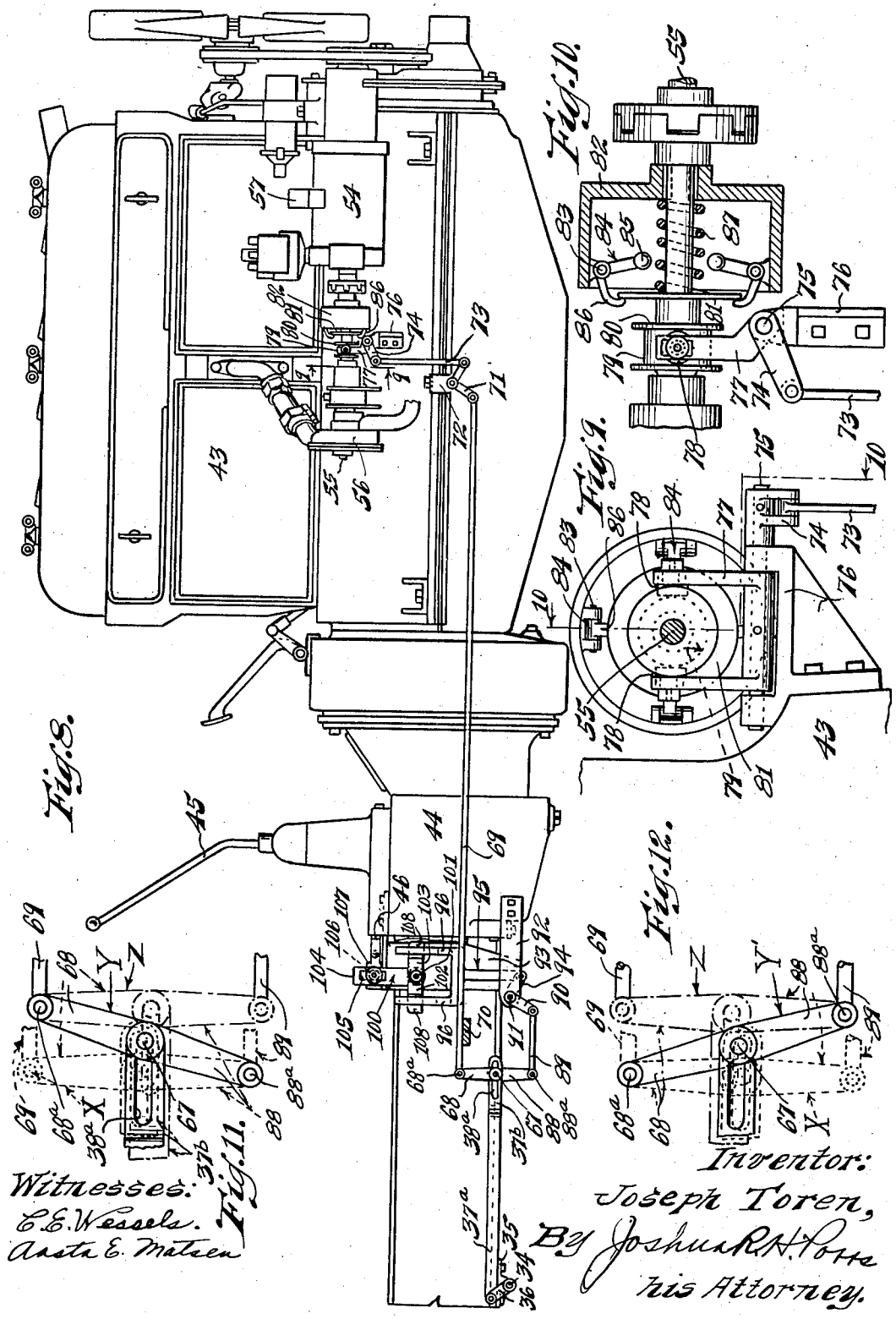
Witnesses:
C. E. Wessels
Aasta E. Matsen

Inventor:
Joseph Toren,
By Joshua R. H. Potts
his Attorney.

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DOOR LOCKING MEANS

Filed Oct. 7, 1936 4 Sheets-Sheet 3



Witnesses:
C. E. Wessels.
Aasta E. Matsen

Inventor:
Joseph Toren,
By Joshua R. H. Potts
his Attorney.

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DOOR LOCKING MEANS

Filed Oct. 7, 1936 4 Sheets-Sheet 4

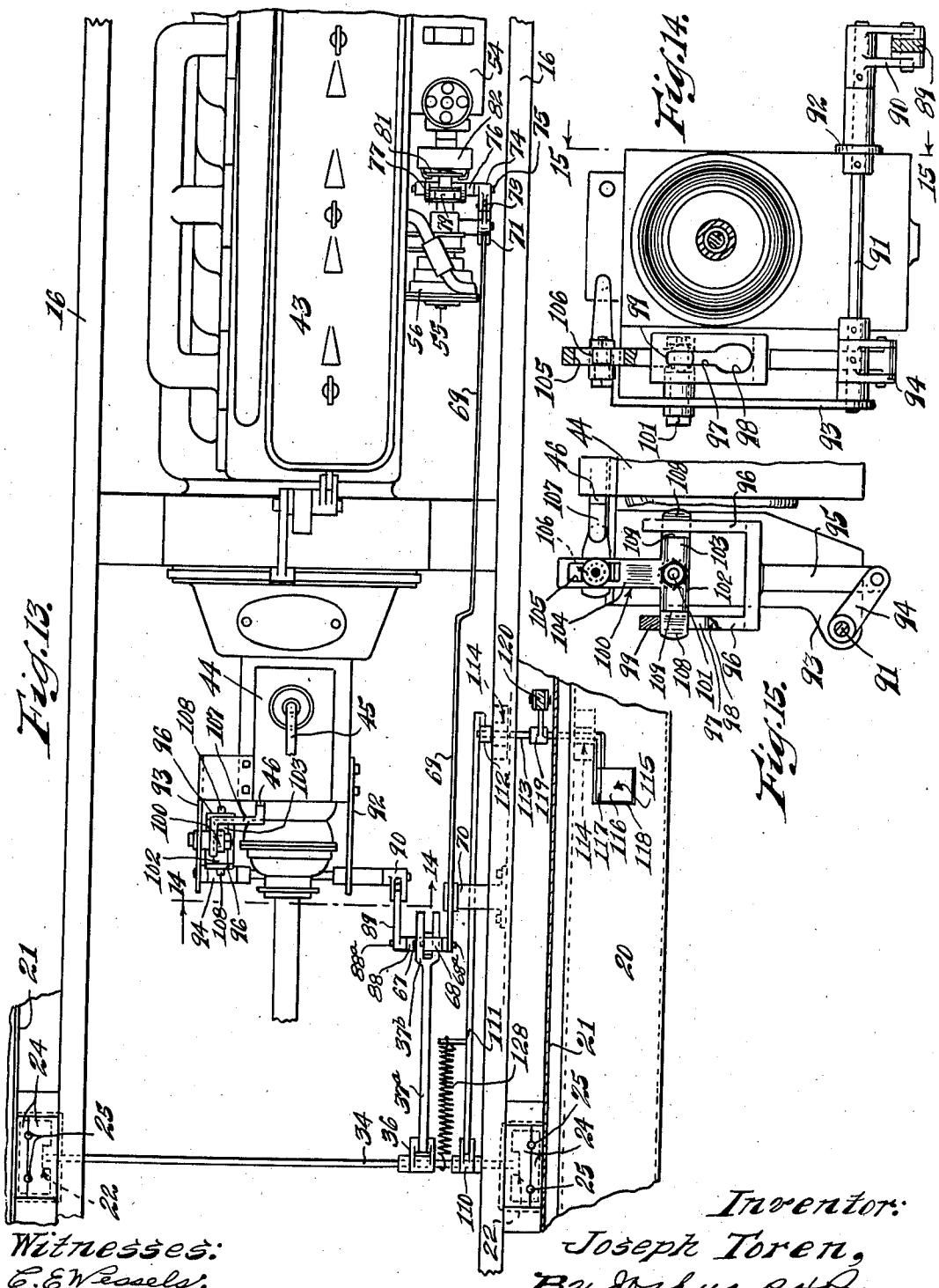


Fig. 13.

Fig. 14.

Fig. 15.

Witnesses:
C. E. Wessels.
Anita E. Matsen

Inventor:
Joseph Toren,
By Joshua R. H. Potts
his Attorney.

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UNITED STATES PATENT OFFICE

2,132,767

DOOR LOCKING MEANS

Joseph Toren, Chicago, Ill.

Application October 7, 1936, Serial No. 104,370

29 Claims. (Cl. 180—82)

My invention relates to automatic door locking means and has particular reference to means for automatically locking automobile doors.

This application is a continuation, in part, of my co-pending application, Serial No. 17,188, filed April 19, 1935.

Every one is familiar with the great number of children and even adults who are constantly falling out of opening doors of automobiles to be killed or injured. It is also a fact that a great many door locks have been provided and that all of these have been found to be unsatisfactory for one reason or another.

An object of my invention has been to provide a door lock which will automatically lock the doors of an automobile without any special action on the part of anybody to lock the doors. I have illustrated means whereby the moment the gear shift lever of a car moves into second and third speed positions the doors are automatically locked merely by the act of moving into second and third speed positions. The said means could be illustrated as applying to first and reverse speeds just as easily, but I have concluded that in practice there is no need for locking the doors in first and reverse speeds as these speeds are infrequently used and the danger from a fall out of a car at those speeds is not of sufficient practical importance to warrant the illustration of my means to those speeds. In my pending application hereinabove referred to I have shown and described means for accomplishing the above results wherein the door lock-actuating mechanism is operated by a piston by pneumatic means in connection with the vacuum created by the manifold of the engine which operating mechanism is caused to be set in operation by a valve controlling the vacuum, the valve being operated by a gear shift lever when the said gear shift lever is changed from neutral to second or third speed positions. My present invention involves substantially the same principles of operation, the physical embodiment of the invention being represented by mechanical mechanism and electrical apparatus. In general, the conditions under which the doors will be locked are the same. That is, the engine must be running and the gear shift lever must be in one of the selected speed positions, which, as already stated, will, in practice be the second and third speeds, respectively.

Another object of the invention is to provide external locking means for all the car doors utilizing, in part, the mechanism employed for locking the car doors as referred to above when the car is being driven or when the car is momentarily stopped as for stop lights or other traffic conditions requiring momentary stops.

A further object of my invention is to provide a device of the kind described which will be not only practical but reasonable in cost to manufacture.

Other objects and advantages will hereinafter be brought out more fully in the following specification reference being had to the accompanying drawings forming a part thereof, in which:

Fig. 1 is a side elevation of an automobile embodying my invention;

Fig. 2 is a partial cross-sectional elevation taken along the line 2—2 of Fig. 1;

Fig. 3 is a similar view taken along the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary elevation, partly in section, taken along the line 4—4 of Fig. 2, illustrating the door locking mechanism in locked position;

Fig. 5 is a view similar to Fig. 4 showing the mechanism in unlocked position;

Fig. 6 is an enlarged view of the cam arm and roller shown in Figs. 4 and 5;

Fig. 7 is a side elevation of the engine and transmission of a typical motor vehicle illustrating a form of my present invention utilizing electrical operation;

Fig. 7a is a top view of the member 47, as shown in Fig. 7;

Fig. 8 is a similar view of such a motor vehicle illustrating the embodiment of a modification of my invention wherein the operation is entirely mechanical;

Fig. 9 is a partial sectional elevation taken along the line 9—9 of Fig. 8;

Fig. 10 is a view of the subject matter of Fig. 9 taken along the line 10—10 of Fig. 9.

Fig. 11 is an enlarged view showing one of the link members in various positions;

Fig. 12 is a view similar to Fig. 11 showing the same mechanism in a different position;

Fig. 13 is a plan view of the mechanism shown in Fig. 8;

Fig. 14 is a partial sectional view taken along the line 14—14 of Fig. 13; and

Fig. 15 is a sectional view taken along the line 15—15 of Fig. 14;

Referring more particularly to the drawings, and especially Figs. 1 to 6, the preferred form of my invention which has been chosen to illustrate the principle thereof and its application is shown applied to a common chassis frame 15, having the usual channel sides 16. Mounted on the top of

each of the upper flanges of the channel members 16 is a sill 17 supporting the usual body 18 provided with hinged doors 19. The car in the form shown is what is called a four-door sedan type with the two doors on each side opening away from the center post. It will be understood, however, from the foregoing that my invention is applicable to two-door cars as well as cars having more doors. Referring particularly to Fig. 2, the car is provided with the usual running boards 20, secured to the channel sides 16. There is also provided the usual side plates 21 secured to the running boards 20 and the body 18, and a supplemental casting 22 provided with a lower flange 23 and a pair of upper flanges 24, which castings 22 are secured by bolts to the channel sides 16. Mounted on each side of the car between the side plates 21 and the castings 22 are a pair of lock pins 25 so arranged as to reciprocate vertically in apertures in the flanges 24. Each pair of pins 25 is in the form shown integral with a horizontal plate 26 which is shown in the lowermost position in Fig. 5. Each horizontal plate 26 in its lowermost position rests upon a pair of blocks 27 which limit the downward movement of the horizontal plates 26. A compression spring 28 encircles each lock pin 25 and is interposed between the plate 26 and the flange 24 and these springs function to normally retain the plates 26 and lock pins 25 in lowermost position. The threshold 29 of each side plate 21, as particularly shown in Figs. 2, 4, and 5, has a slot 30 and the bottom flange 31 of the casing of each door has a slot 32. A cam arm 33 is fixed on each end of a shaft 34 by means of a hub and pins, which shaft is mounted in bearings 35 suppported on the chassis members 16. At its outer end cam arm 33 has a ball bearing cam roller 33*a*. As will hereinafter more fully appear, the cam functions on the turning of the shaft 34 to raise or lower the plates 26 and the pins 25 upwardly into the slots 30 and 32 thus locking the doors, the pins being depressed out of the slots by means of the springs 28 heretofore mentioned unlocking the doors when the shaft 34 is turned back to its original position. It will also be seen that the supplemental casting 22 and its flanges provided with apertures act to guide the vertical reciprocation of the pins 25.

A shaft 34 is provided with a rock arm 36 (Figs. 2 and 7) to which is pivotally connected a connecting link 37 which has an elongated slot 38 at its free end in which a pin 39 is free to reciprocate under the action of an armature 40, to which pin 39 is connected. Armature 40 is actuated by solenoid 41, which, in turn, is suitably mounted on a bracket 42 secured to side channel member 16 or otherwise, if desired. The motor vehicle has the usual engine 43, transmission 44, and gear shift lever 45, the latter being connected to the usual shifter fork rods, one of which is shown at 46, preferably being the one used to shift the gears from the intermediate or second speed position to the third or high speed position. Shifter rod 44 has integrally secured to it a rod extension member 47 which is somewhat Z-shaped in plan view, as shown in Fig. 7*a*, and has a cam surface 48 and a cam surface 49, these cam surfaces being separated by recess 50 opposite which in the neutral position of the lever 45 is a push button 51 of a switch 52 suitably mounted on a bracket 53 which, in turn, is secured to the casing of the transmission 44. As the gear shift lever 45 is shifted from neutral to second speed position, shifter fork rod 46 and extension member 47 will be shifted rearwardly of the car and cam surface 48 will engage push button 51 closing the push button contact and similarly when the gear shift lever is shifted to the third or high speed position, shifter fork rod 46 and extension member 47 will be shifted forwardly with respect to the car and cam surface 49 will engage push button 51, similarly closing the circuit through switch 52 as will be more fully apparent hereinafter.

The motor vehicle is shown having a usual electric generator 54 suitably mounted as at the side of the engine, the generator being driven by an auxiliary shaft 55, which may supply power for a water pump 56. The generator is provided with the usual cut-out relay 57 which has a generator contact 58 and a battery contact 59, which contact is connected by wire 60 through the usual ammeter A to the usual battery 61. The generator is supplied with the usual generator contact 62 and is connected by generator contact wire 63 to the cut-out relay generator contact 58. A wire 64 connects wire 63 to one contact of button switch 52 and the other contact of switch 52 is connected by a wire 65 to one contact of solenoid 41, the other contact of the solenoid having a ground wire connection 66, it being understood that one side of the battery 61 is also grounded in the usual manner. The operation of my invention as described hereinabove is as follows:

Assuming the motor vehicle is at rest with the motor shut off and the gear shift lever 45 in neutral position, the door locking mechanism will be as shown in Fig. 5, with the cam arm 33 out of engagement with plate 26. When the engine is started and brought up to normal operating speed, the generator will create a voltage at contact 62 which will be supplied through wires 63 and 64 to push button switch 52. When the car has been put into motion, and gear shift lever 45 shifted to second speed position, the cam surface 48, will, as described above, engage push button 51, which will close the contacts of switch 52 and the generator voltage circuit will be completed through wires 65, solenoid 41 and ground wire 66. This will energize the solenoid, the armature 40 of which will be retracted, the pin 39 of the armature 40 engaging an outer end of slot 38 of link 37, shifting the link 37 forwardly, which motion will be transmitted through rock arm 36, rock shaft 34, which motion will rock cam arm 33 to the position shown in Fig. 4, thus elevating the plates 26 and pins 25 in passing through slots 30 and 32 of the threshold 29 and clamp 31 of the casing, thus locking all of the doors of the vehicle. When the car is brought to a stop, and the gear shift lever returned to neutral, the contacts of the push button switch 52 will be opened, breaking the circuit through the solenoid 41, which will release the armature, and the cam arm 33 will be returned to the position shown in Fig. 5 and the pins 25 retracted from the slots 30 and 32 by the action of springs 28. In stopping the car, if the gear shift lever is inadvertently or otherwise left in running or high speed position or the second or intermediate position, or the engine stopped by the operation of the ignition switch, or in any other manner, the generator voltage will fall to zero, which will similarly deenergize solenoid 41 causing the release of the lock pins 25, as in the manner already described. It will thus be clear that ample safety for the occupants of the motor vehicle is provided by releasing or unlocking the doors, upon the motor vehicle being brought to a stop in either manner as described. This is of particular value in case

of a car being involved in an accident; assuming the driver and other occupants become disabled, and the stopping of the engine which would usually occur under such circumstances, the doors of the vehicle will be automatically unlocked.

The locking feature as described is of particular value when the motor vehicle is brought to a stop by highway conditions, such as stop signs or stop lights, it being possible to keep the doors locked against the incursion of an uninvited and unwanted person, this being possible by the gear shift lever being shifted to the intermediate or second speed upon arriving at the stop light or a stop sign, the car being maintained at rest by the release of the clutch pedal in the well understood manner.

Referring now more particularly to Figs. 8 to 15, inclusive, the foregoing described results may be obtained in a mechanical manner. A similar motor vehicle engine and transmission being shown, a rock shaft **34** and rock arm **36** being connected by link arm **37***a* which is provided with a yoke **37***b*, the arms of the yoke each having an elongated slot **38***a* which slot is similar to the slot **38** of the embodiment as shown in Figs. 1 to 7, inclusive, except that it is somewhat longer than slot **38** for a purpose to be hereinafter explained. A stub shaft **67** is reciprocable across slots **38***a*, and a rock arm **68** is secured to shaft **67** at one end thereof and is pivoted at **68***a* to an elongated link member **69** one end of which is provided with a supporting bracket **70** suitably secured to side channel **16** or otherwise similarly mounted. At its forward end link **69** is pivotally connected to a bell crank **71** which is pivoted on a bracket **72** attached in any convenient manner to the engine or the car frame. Crank **71** is also pivoted to a link **73**, which, in turn, is connected to the free end of a rock arm **74**, (Figs. 9 and 10) arm **74** being connected to a stub shaft **75** mounted in a bearing bracket **76** suitably affixed to the engine **43**. Shaft **75** also has secured to it a pair of yoke arms **77**, the outer ends of which are provided with bearing rollers **78** positioned in a groove **79** of a thrust collar **80** which is freely oscillatable on the auxiliary shaft **55**. Collar **80** is provided with a thrust plate **81** adjacent a bell housing **82** which is keyed to and rotatable with shaft **55**. A plurality of pivots **83**, are each pivoted to a bell crank **84** carrying a centrifugal weight arm **85** and a lever arm **86** which engages the far side face of thrust plate **81**. The spring **87** normally maintains thrust collar **80** to the left, the collar being drawn to the right on the shaft **55** against the action of spring **87** by the action of weight arms **85**, being thrown outwardly upon the rotation of housing **82** with the normal running of the engine **43**. The operation of the foregoing described parts is such that when the engine is started the weight arms **85** will be thrown outwardly, moving thrust collar **80** to the right, which, in turn, will rock yoke arms **77** and rock arm **74** which will lift link **73** and cause link **69** to be shifted forwardly which will shift pivot **68***a* from the position shown in Fig. 12 to that shown in Fig. 11. A second rock arm **88** is mounted on stub shaft **67** and has a pivot **88***a* to which is connected one end of link **89**, the other end being connected to a yoke arm **90**, which is mounted in a pair of brackets **92** and **93** suitably secured to the transmission **44**. A yoke arm **94** is secured, at one end, to shaft **91** and pivoted at the other end to a link **95**, which, in turn, is provided with a pair of yoke arms **96** each of which has a narrow slot **97** which merges with an enlarged slot **98**, the upper edges of the slots **97** comprising bearing shoulders **99** for the arms of a T-shaped rock member **100** pivotally mounted on a stub shaft **101**, which, in turn, is suitably mounted on bracket **93**. Rock member **100** has a pair of horizontally extending arms **102** and **103** and an upwardly extending actuating arm **104**, the outer end of which is provided with a slot **105**. A roller **106** is maintained in slot **105** and is pivoted on the outer end of a shifter rod extension member **107** which is integrally connected to shifter yoke rod **46**. Shifter rod **107** corresponds in function to extension rod member **47** of the above described electrically operated embodiment of my invention. The outer ends of arms **102** and **103** have flattened portions **108** adapted to engage slots **97** and shoulders **109** by which the yoke arm members **96** are maintained in correct relative position with respect to arms **102** and **103**. It will be understood that the enlarged slots **98** are for the purpose of enabling the arms **102** and **103** to be assembled in operative connection with the yoke arms **96** of the mechanism described. The operation of the mechanism described immediately preceding is as follows:

When the gear shift lever **45** is shifted forward to the intermediate or second speed position, shifter fork rod **46** is shifted rearwardly carrying with it rod extension **107**, which action rotates rock member **100** counter-clockwise, as seen in Fig. 15, causing the elevation of arm **103**, the upper edge of which bearing on the adjacent shoulder **99** of one of the yoke arms **96**, causes link **95** to be raised, thus rotating yoke arm **94**, thereby rocking shaft **91** and causing yoke arm **90** to be rotated and drawing link **89** and pivot **88***a* forward to the position shown in full lines in Fig. 12. A comparison of Figs. 11 and 12 shows that the forward actuation of either link **69** or link **89** from the neutral or unlocked position with respect to the position of the door lock pins **25** and the arm **37***a* is such that the shaft **67** will be shifted from its approximate mid-position in slot **38** to the right end of said slot and that no resulting action will occur with respect to arm **37***a* and the door lock mechanism connected with pins **25**. Assume that the motor vehicle is put into operation in the usual and ordinary manner with the gear shift lever in neutral position and the engine started. As soon as the engine has acquired the usual idling speed, the link **69** would have been shifted forwardly as described hereinabove, carrying stub shaft **67** forwardly in slot **38***a* to the position shown in Fig. 11. When the motor vehicle has been put into forward motion and gear shift lever **45** shifted to second or intermediate speed position link **89** will be shifted forwardly carrying pivot **88***a* forwardly, thus shifting arm **37***a* forwardly inasmuch as the shaft **67** has during this latter movement been in engagement with the forward end of slot **38***a* causing the shift as described. This will result in the shaft **34** being rocked causing the cam arm **33** to raise the locking pins **25** to the locking position of Fig. 4 thus locking the doors of the motor vehicle.

When the gear shift lever **45** is shifted from the said intermediate or second position to the third or high position the shifter fork rod **46** will be shifted forwardly carrying the extension rod **47** through the neutral position and rock member **100** will be rotated clockwise and the arm **102** will now engage the opposite yoke arm **96**, again causing the link **95** to be raised and the doors maintained in locked position as described.

Assuming the car to be stopped in the usual manner by first returning the gear shift lever to neutral, the arm 102 will be rotated to the horizontal position dropping the link 95 which will cause link 89 to be returned carrying the pivot 88a and the shaft 67 to the full line position of Fig. 11, thus releasing arm 37a and causing the door lock pins 25 to be withdrawn thus unlocking the doors. A similar result would have occurred if the engine had been stopped prior to shifting the gear shift lever to neutral position. In that case the link 69 would first have been returned to the normal or inoperative position, as shown by the full line position of Fig. 12, similarly releasing arm 37a and the door lock pins 25. As shown in Figs. 11 and 12, rock arms 68 and 88 being fixed to shaft 67, the two arms can be considered as branches of a single lever which may assume the positions shown, depending upon the sequence of operation of the gear shift lever and the engine. With the engine stopped and the gear shift lever in neutral, the arms 68 and 88 will assume the dotted position designated X in Figs. 11 and 12, the full line or Y position of Fig. 11 being that in which the link 69 has been actuated first, the position Y' of Fig. 12 being that in which the link 89 has been actuated first, and the broken line or Z-position showing the position of the rock arm members 68 and 88 when both the links 69 and 89 have been actuated into operative position. From the foregoing it will be apparent that the doors will be locked only when the two conditions exist simultaneously, that is, the running of the engine and the position of the gear shift lever 45 in either the second or third speed position. This corresponds exactly with the result obtained with respect to the electrical operation hereinabove described.

As a further feature of my invention, I have provided means for locking the doors of the motor vehicle from the outside thereof, as when parking or otherwise leaving the vehicle unattended and these means utilize in part the mechanism described hereinabove.

A second rock arm 110 is secured to shaft 34 and is pivotally connected to a link 111, the forward end of which is pivoted to a rock arm 112 secured to a rock shaft 113 mounted in bearings 114 suitably secured to side channel members 16 and to the right hand running board 20, the bearings 114 and the rock shaft 113 being positioned somewhat forwardly of the right front door. A pedal 115 attached to rock shaft 113 is suitably secured thereto and is provided with a foot plate 116 and a guard or kick plate 117 (Fig. 3). A recess 118 is provided in the running board 20 for the foot plate 116 in such a manner that the plate 116 may be flush with the surface of the running board 20 when the pedal is in a depressed position. A rock arm 119 is secured to shaft 113 and is pivoted to a lock link 120, the upper end of which is contained in a lock housing 121 mounted inside the side panel of the motor vehicle between the forward edge of the front door and the hood of the engine. Suitable guides 122 are provided in the lock housing 121 for link 120, and the upper end of link 120 has a keeper slot 123 through which the lock bolt 124 of the lock is adapted to enter to lock the link 120 when said link is in its upper position. The lock has the usual lock arm 125 by which the lock bolt 124 is thrown and has the usual key cylinder 126 and key slot 127. A spring 128 is secured at one end to link 111 and by the other end to shaft 34 and aids in normally maintaining the locking mechanism in unlocked position, aiding springs 28 in this function. In order to lock the doors from the outside, pedal 115 is depressed which rocks shaft 113 shifting link 111 forward and lock link 120 upwardly. Link 111 and rock arm 110 by rotating shaft 34, in a manner similar to that under the actuation of arms 37 and 37a, cause the pins 25 to lock the doors and at the same time, the key cylinder 126 may be operated by the key to cause arm 125 to throw the lock bolt 124 into engagement with the keeper slot 123 which is now in juxtaposition therewith. In this manner all of the doors of the car will be locked simultaneously and there will be no danger of leaving one or more of the doors unlocked, which is otherwise apt to occur with cars in which the doors are locked independently from within.

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

1. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, a source of power for operating said locking member, and means for interconnecting said power source and said locking member, said means being operatively connected to and controlled by said gear shift lever.

2. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, a source of mechanical power for operating said locking member, and means for interconnecting said power source and said locking member, said means being operatively connected to and controlled by said gear shift lever.

3. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, a source of electric power for operating said locking member, and means for interconnecting said power source and said locking member, said means being operatively connected to and controlled by said gear shift lever.

4. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, a source of power derived from the motive power of said motor vehicle for operating said locking member and means for interconnecting said power source and said locking member, said means being operatively connected to and controlled by said gear shift lever.

5. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, a source of mechanical power derived from the motive power of said motor vehicle for operating said locking member and means for interconnecting said power source and said locking member, said means being operatively connected to and controlled by said gear shift lever.

6. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, a source of electrical power derived from the motive power of said motor vehicle for operating said locking member

and means for interconnecting said power source and said locking member, said last means being operatively connected to and controlled by said gear shift lever.

7. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, means for operating said locking member, said means including a power producing element, said gear shift lever adapted to control the application of said power for operating said locking member.

8. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, means for operating said locking member, said means including a mechanical power producing element, said gear shift lever adapted to control the application of said power for operating said locking member.

9. The combination with a motor vehicle having a variable speed transmission and gear shift lever, of automatic door locking means comprising a locking member, means for operating said locking member, said means including an electric power producing element, said gear shift lever adapted to control the application of said power for operating said locking member.

10. The combination with an automobile having an engine and transmission, a gear shift lever for said transmission, and a door, of a lock member for said door, a lock operating means for said lock member, a source of power to actuate said lock operating means, and means actuated by said gear shift lever to connect said lock operating means and said source of power.

11. The combination with an automobile having an engine and transmission, a gear shift lever for said transmission, and a door, auxiliary power producing means actuated by said engine, door locking means actuated by said power, and means actuated by said gear shift lever to control the application of said power for operating said door locking means.

12. The combination with an automobile having an engine and transmission, a gear shift lever for said transmission, and a door, auxiliary power producing means actuated by said engine, door locking and unlocking means actuated by said power, and means actuated by said gear shift lever to control the application of said power for operating said door locking means.

13. The combination with an automobile having an engine and transmission, a gear shift lever for said transmission, and a door, auxiliary power producing means actuated by said engine, door locking means actuated by said power, and means operated by the gear shift lever when actuated into a running position to control the application of said power to said door locking means to lock said door.

14. The combination with an automobile having an engine and transmission, a gear shift lever for said transmission, and a door, auxiliary power producing means actuated by said engine, door locking means actuated by said power, and means actuated by said gear shift lever to control the application of said power for operating said door locking means, said last means adapted to be operated by the gear shift lever when actuated from a running to neutral position to control the application of said power to said door locking means to unlock said door.

15. The combination with an automobile having an engine and transmission, a gear shift lever for said transmission, and a door, auxiliary power producing means actuated by said engine, door locking means actuated by said power, and means operable by the gear shift lever when actuated into a selected one of its running positions to control the application of said power to said door locking means to lock said door.

16. The combination with an automobile having an engine and transmission, a gear shift lever for said transmission, and a door, auxiliary power producing means actuated by said engine, door locking means actuated by said power, and means operable by gear shift lever when actuated into a selected one of its running positions to control the application of said power to said door locking means to lock said door and when actuated from a running position to neutral position to control the application of said power to said locking means to unlock said door.

17. The combination with a motor vehicle having a variable speed transmission, a gear shift lever and a generator, of automatic door locking means comprising a locking member and means for automatically operating said locking member, said means including a solenoid circuited to said generator, and a gear shift lever operated switch in said circuit, said switch adapted to be open when said gear shift lever is in neutral position and to be closed when said lever is in a running position.

18. The combination with a motor vehicle having a variable speed transmission, a gear shift lever, a generator, of door locking means comprising a locking member, electric means for automatically operating said locking member, said means including a solenoid adapted upon being energized to actuate said locking member to lock said door, a circuit connecting said solenoid to said generator, and a gear shift lever operated switch in said circuit adapted to close said circuit to energize said solenoid.

19. The combination with a motor vehicle having a variable speed transmission, a gear shift lever, a generator, of door locking means comprising a locking member, electric means for automatically operating said locking member, said means including a solenoid adapted upon being de-energized to actuate said locking member to unlock said door, a circuit connecting said solenoid to said generator, and a gear shift lever operated switch in said circuit adapted to close and open said circuit to energize and de-energize said solenoid.

20. The combination with a motor vehicle having an engine, a variable speed transmission, and a gear shift lever, of automatic door locking means comprising a door locking member and means for automatically operating said locking member, said last means including an oscillatable lock operating arm, a link adapted to be oscillated by the operation of said engine and means controlled by said gear shift lever to interengage said arm and said link to actuate said door locking member.

21. The combination with a motor vehicle having an engine, a variable speed transmission, and a gear shift lever, of automatic door locking means comprising a door locking member and means for automatically operating said locking member, said last means including an oscillatable lock operating arm, a rotatable shaft driven by said engine, a link adapted to be oscillated by the rotation of said shaft, and means controlled by said gear shift lever to interengage said arm and said link to actuate said door locking member.

22. The combination with a motor vehicle having an engine, a variable speed transmission, and a gear shift lever, of automatic door locking means comprising a door locking member and means for automatically operating said locking member, said last means including an oscillatable lock operating arm, a rotatable shaft driven by said engine, a link adapted to be oscillated by the rotation of said shaft, and means controlled by said gear shift lever to interengage said arm and said link to actuate said door locking member, said control means including a lever pivotally connected to said lock operating arm and said link.

23. The combination with a motor vehicle having an engine, a variable speed transmission, and a gear shift lever, of automatic door locking means comprising a door locking member and means for automatically operating said locking member, said last means including an oscillatable lock operating arm, a rotatable shaft driven by said engine, a link adapted to be oscillated by the rotation of said shaft, and means controlled by said gear shift lever to interengage said arm and said link to actuate said door locking member, said control means including a lever pivotally connected to said lock operating arm and said link, said lock operating arm having a slot for the lever pivot.

24. The combination with a motor vehicle having an engine, a variable speed transmission, and a gear shift lever, of automatic door locking means comprising a door locking member and means for automatically operating said locking member, said last means including an oscillatable lock operating arm, a rotatable shaft driven by said engine, a link adapted to be oscillated by the rotation of said shaft, and means controlled by said gear shift lever to interengage said arm and said link to actuate said door locking member, said control means including a lever pivotally connected to said lock operating arm and said link, said lock operating arm having a slot for the lever pivot, said link adapted to move said lever pivot to the end of said slot.

25. The combination with a motor vehicle having an engine, a variable speed transmission, and a gear shift lever, of automatic door locking means comprising a door locking member and means for automatically operating said locking member, said last means including an oscillatable lock operating arm, a rotatable shaft driven by said engine, a link adapted to be oscillated by the rotation of said shaft, and means controlled by said gear shift lever to interengage said arm and said link to actuate said door locking member, said control means including a lever pivotally connected to said lock operating arm and said link, said lock operating arm having a slot for the lever pivot, said link adapted to move said lever pivot to the end of said slot and said gear shift lever controlled means adapted to shift said lever to lock the doors.

26. The combination with a motor vehicle having an engine, a variable speed transmission, and a gear shift lever, of automatic door locking means comprising a door locking member and means for automatically operating said locking member, said last means including an oscillatable lock operating arm, a rotatable shaft driven by said engine, a link adapted to be oscillated by the rotation of said shaft, and means controlled by said gear shift lever to interengage said arm and said link to actuate said door locking member, said control means including a lever pivotally connected to said lock operating arm and said link, said lock operating arm having a slot for the lever pivot, said gear shift lever controlled means adapted to move said lever pivot to the end of said slot and said link adapted to shift said lock operating arm to lock the doors.

27. The combination with a motor vehicle having a plurality of doors, door lock mechanism, an engine, a variable speed transmission, and a gear shift lever, of means controlled by said gear shift lever and engine to automatically actuate said mechanism to lock said doors when said motor vehicle is running, and means to actuate said mechanism to lock said doors when the motor vehicle is to be left unattended.

28. The combination with a motor vehicle having a plurality of doors, an engine, a variable speed transmission, a gear shift lever, of door locking means, means actuatable by said engine and gear shift lever when in operative condition and under the control of the driver thereof to lock said doors, and said means being actuatable by the driver from without the motor vehicle to lock said doors.

29. The combination with a motor vehicle having a plurality of doors, an engine, a variable speed transmission, a gear shift lever, of door locking means, means actuatable by said engine and gear shift lever when in operative condition and under the control of the driver thereof to lock said doors, and said last means including a pedal and a key operated lock actuatable by the driver from without the motor vehicle to lock said doors.

JOSEPH TOREN.