

Nov. 19, 1957

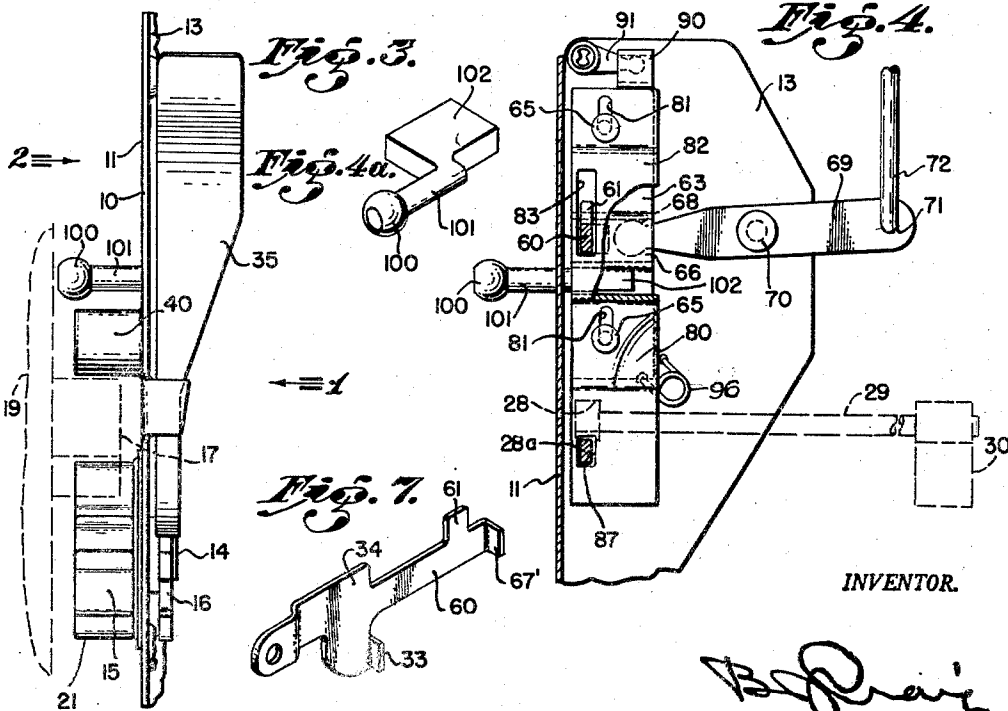
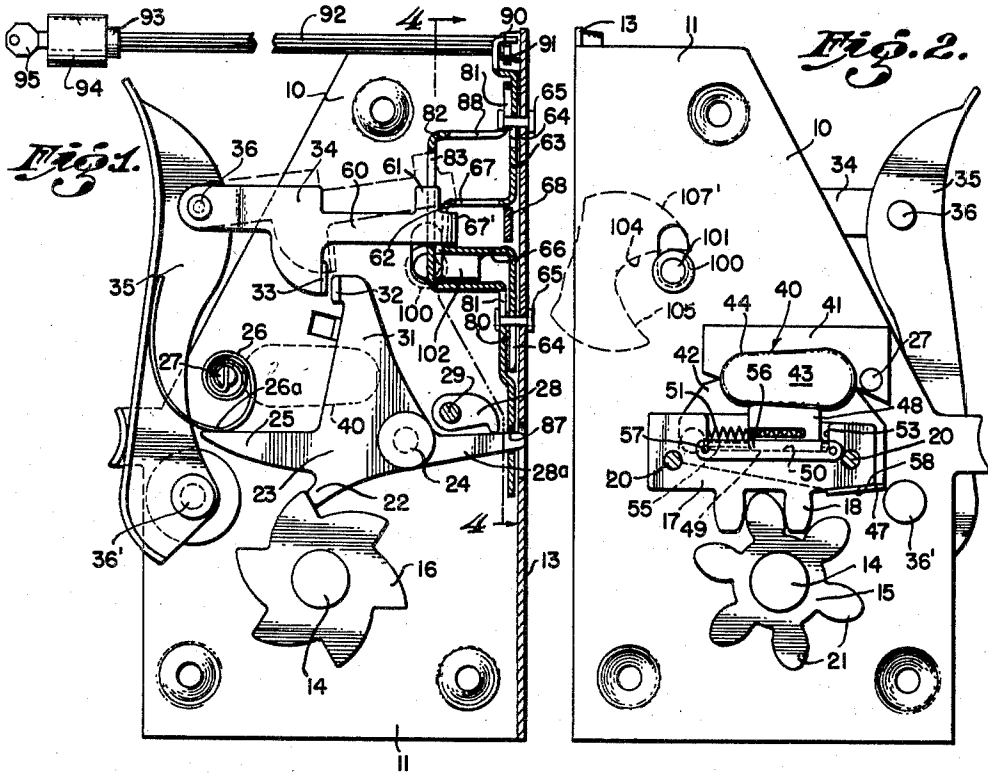
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2,813,418

VEHICLE DOOR LOCK

Original Filed Dec. 18, 1950

2 Sheets-Sheet 1



INVENTOR.

B. J. Craig

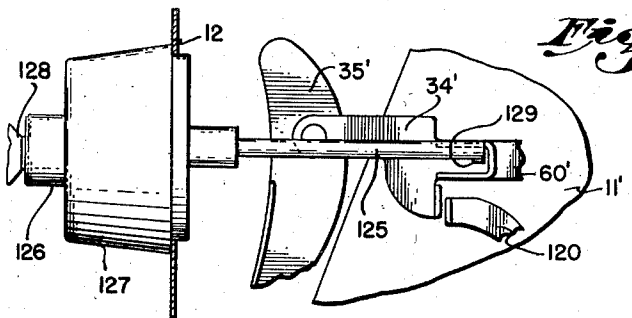
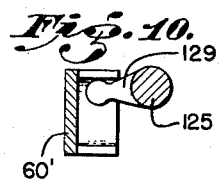
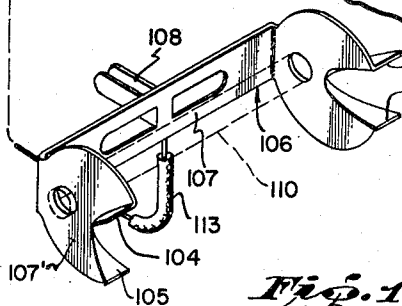
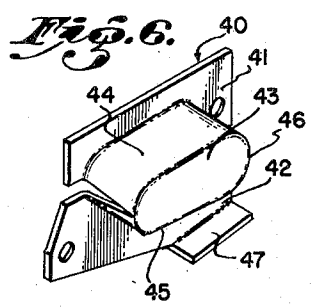
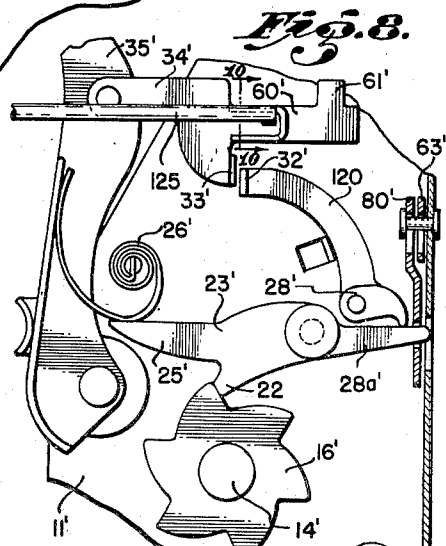
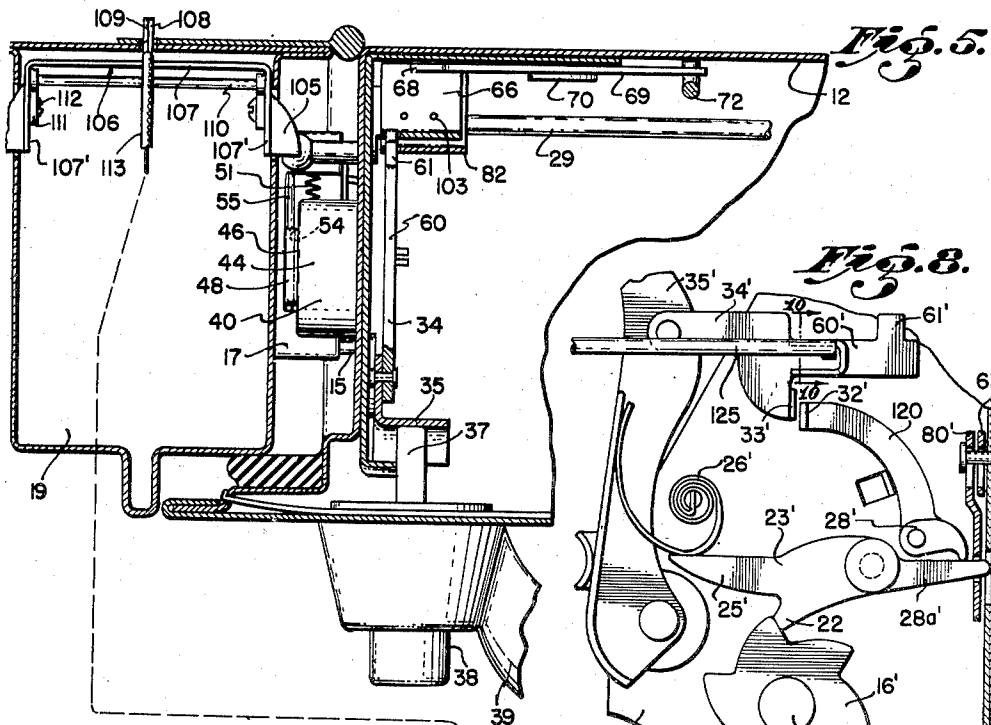
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INVENTOR.

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**VEHICLE DOOR LOCK**

Burnie J. Craig, Los Angeles, Calif.

Original application December 18, 1950, Serial No. 201,281, now Patent No. 2,705,882, dated April 12, 1955. Divided and this application August 17, 1954, Serial No. 450,411

3 Claims. (Cl. 70—135)

This invention relates to a vehicle door lock.

The general object of the invention is to provide an improved vehicle door lock by means of which one or more of the doors of a motor vehicle may be held securely in locked position.

A more specific object of the invention is to provide a coincidental door locking system for locking a plurality of doors and wherein novel lock members are employed.

A further object of the invention is to provide a novel door lock wherein a reciprocating lock member is employed and wherein a coincidental locking member is mounted on the reciprocating lock member.

Another object of the invention is to provide a door latch wherein a release member is movable to locked and unlocked position by operating a reciprocating lock member and wherein means is provided by means of which closing of the door will either unlock the door or permit the door to remain locked if it is closed while the parts are locked.

Another object of the invention is to provide a door lock including a base and a flange and wherein the flange has a reciprocating lock member thereon which is movable to locked and unlocked position and which may be selectively—when the door is closed while the lock is locked—become unlocked or remain locked and wherein the locking member performing these functions includes a coincidental locking member which cooperates with means on the vehicle body whereby all the door locks may be simultaneously locked or unlocked.

Another object of the invention is to provide a novel dovetail construction for locks.

Another object of the invention is to provide a novel strike for locks.

Another object of the invention is to provide a novel operating member for coincidental door locks.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a side elevation, partly in section, looking in the direction of the arrow 1 of Fig. 3;

Fig. 2 is a view similar to Fig. 1, looking in the direction of the arrow 2 in Fig. 3 and showing the opposite side of the door lock;

Fig. 3 is a front elevation of the door lock;

Fig. 4 is a section taken on line 4—4, Fig. 1;

Fig. 4A is an isometric view, showing the coincidental lock member;

Fig. 5 is a horizontal, sectional view showing the door lock and associated door and pillar;

Fig. 6 is an isometric view of the dovetail member;

Fig. 7 is an isometric view of the actuating member;

Fig. 8 is a fragmentary view similar to Fig. 1, showing a modification;

Fig. 9 is a fragmentary top plan view showing the modification, and

Fig. 10 is a section taken on line 10—10, Fig. 8.

This application is a division of application Serial No.

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201,281, filed December 18, 1950, now Patent No. 2,705,882, granted April 12, 1955. In said application Serial No. 201,281 the claims introduced were broadly drawn to both species of the invention and specifically to the species of Figs. 1 to 7, wherein the actuating member rocks the dog. In the present application all claims are drawn to the species of Figs. 8, 9 and 10 wherein an arm is moved by the actuating member and the arm in turn releases the dog.

Referring to the drawing by reference characters, the invention is shown as embodied in a vehicle door latch which is indicated generally at 10. As shown the latch includes a body 11 adapted to be secured to a vehicle door 12. The body 11 includes a flange 13.

The body 11 supports a rotatable shaft 14 which, on the outer face of the body has a bolt 15 fixed thereon and at the inner face has a ratchet member 16 fixed thereon.

The rotary bolt 15 projects beyond the end of the door 12 and coacts with a strike member 17 which has teeth 18 thereon and is secured to the door pillar 19 by fastening members 20. The rotary bolt includes teeth 21 which engage the teeth 18.

The ratchet 16 is adapted to be engaged by an ear 22 on a dog 23 which is shown as pivoted at 24 to the body 11. The dog has another ear 25 which is engaged by an intermediate portion 26<sup>a</sup> of a spring 26, mounted on a fastening member 27. The dog is thus normally urged to engaged position.

The dog 23 is shown as adapted to be rocked by an arm 28 fixed on a shaft 29. The arm 28 engages an arm 28<sup>a</sup> on the dog 23. The arm 28<sup>a</sup> is adapted to be rocked by a crank 30, which is adapted to be actuated by a remote control member on the inside of a door. The remote control member may be similar to the remote control member shown in Craig Patent 2,450,372, granted September 28, 1948.

The dog 23 also includes an upwardly extending arm 31 which has a bent end tongue 32 which is adapted to be engaged by a tongue portion 33 on an actuating member 34, which is shown as mounted on a release arm 35 by means of a pivot pin 36. The release arm 35 is pivoted on the body member 11 at 36' and is engaged and urged to non-releasing position by the free end of the spring 26.

The construction is such that when the release arm 35 is pushed inwardly (to the right in Fig. 1) as by a push member 37, which is operated by a push button 38 on a door handle 39, the actuating member 34 will be moved to the right in Fig. 1, causing the portion 33 to engage the portion 32 of the dog 23 to rock the dog so that the ear 22 will be shifted to clear the ratchet 16 and to allow the shaft 14 to rotate to thus free the bolt 15.

The strike 17 coacts with a wedge member 40 which preferably consists of a one-piece stamping bent up to form an upper base portion 41 and a lower base portion 42 from which a wedge 43 is punched up. This wedge member includes an upper portion 44 and a lower portion 45 as well as a top 46. Through the upper base portion 41 the fastening member 27 extends. The pivot member 24 extends through the lower base portion 42. The wedge member 40 includes an inclined flange 47 which is perpendicular to the lower base portion 42.

The bottom portion of the wedge 43 is engageable by a wedge 48 on the strike. The wedge 48 has a planar lower face 49, slidably engaging a face 50 on the strike 17. A spring 51 partly disposed in a hole in the wedge 48, normally urges the wedge 48 to the right in Fig. 2 towards a shoulder 53 on the strike. The strike 17 has a groove 54 which engages a bead 55 on the wedge 48. A cover member 56, which may be spot welded to the strike as at 57, prevents removal of the wedge 48 but allows it to slide. The wedge member flange 47, which

is inclined, engages a similarly inclined face 58 on the strike 17.

As the door is closed the strike member teeth 18 engage the teeth 21 on the rotary bolt and as a result the rotary bolt 15 will be rotated to the position shown in Fig. 2 so that the ear 22 on the dog 23 engages one of the ratchet teeth 16 and is held in engagement therewith by the spring portion 26<sup>a</sup> previously described.

While the parts are moving to the position in Fig. 2, the wedge member 48 will be first forced to the left in Fig. 2 by engagement with the lower face 45 of the wedge 43 until the door is closed, whereupon the spring 51 will gradually urge the wedge 48 forwardly as the parts "settle" to position wherein the inclined face 58 on the strike 17 engages the flange 47 in wedging relation. This wedging action will cause the teeth 18 to engage the teeth 21 firmly, with no up or down play, thus holding the door securely in closed position.

When closed, the door may be opened by pushing on the button 38 to rock the release arm 35 and to thereby shift the actuating member 34 to the right in Fig. 1. This will cause the portions 33 and 32 to engage to rock the dog 23 and thereby free the ratchet 16.

To lock the latch against opening from without the vehicle, the actuating member 34 is moved from the full line position in Fig. 1 to the broken line position in this figure and in doing this the portion 33 on the actuating member will be raised above the portion 32 on the dog so that movement of the actuating member by the push button 38 will not release the ratchet.

To effect the locking operation, the actuating member 34 is provided with a forwardly extending portion 60, from which a tongue 61 extends upwardly. The end of the portion 60 fits in a slot 62 in a locking member 63 which includes slots 64 which receive guide pins 65 fastened on the flange 13 to reciprocatingly mount the lock member.

The lock member 63 includes a U-shaped portion 66 which projects forwardly and in which the slot 62 previously mentioned is arranged. The upper wall of the U-shaped portion 66 has a slot 67 through which the tongue 61 slides. The end of the portion 60 is bent over to form a tongue 67' which prevents upward movement of the portion 60 into the slot 67.

The U-shaped portion 66 is engaged by an enlarged rounded portion 68 on a locking arm 69 which is pivoted as at 70 on the flange 13. The locking arm 69 includes an aperture 71 which receives a push member 72 which extends to the window moulding of the door, thus permitting the arm 69 to be rocked.

When the member 72 is pushed downwardly, the portion 68 will be raised, thus raising the U-shaped portion 66 and raising the lock member 63. This will cause the actuating member 34 to be raised so that the portion 32 and 33 will be out of alignment, whereupon when the actuating member 34 is moved to the right in Fig. 1, the dog 23 will not be rocked, in other words, there will be a locking action.

In order to prevent the user from accidentally locking himself out of the vehicle and also to provide means for readily locking the vehicle door when it is so desired, the present construction includes a lock operating member 80 which has slots 81 slidable on the pins 65 previously mentioned. The member 80 includes a U-shaped outstanding portion 82 which is disposed about the U-shaped portion 66 but is spaced therefrom. This U-shaped portion 82 includes a slot 83 in which the forwardly extending portion 60 on the actuating member 34 is disposed.

The slot 83 is longer than the combined length of the tongue 61 and the width of portion 60 of the actuating member 34 so that there is a space above the upper end of the tongue 61, as shown in Fig. 1 when the parts are unlocked. When the actuating member 34 is moved to the

locked position, the upper end of the tongue 61 will be adjacent the upper end of the slot 83.

When the actuating member is in locked position and the lock operating member 80 is moved downwardly, the lock operating member will engage the tongue 61 and will rock the actuating member 34 downwardly to unlocked position.

In order to move the lock operating member 80 downwardly to unlocked position whenever a door is closed, the free end of the arm 28<sup>a</sup> on the dog 23 fits in a slot 37 in the lower end of the lock operating member 80. Thus when the door is closed the bolt 15 will be rotated and the ratchet 16 will also be rotated so that the dog 23 will be rocked about its pivot 24, thus moving the arm 28<sup>a</sup> downwardly, thereby causing the upper wall of the slot 83 to engage and pull down the tongue 61 to thereby pull the actuating member 34 downwardly to unlocked position.

If, however, when the actuating member 34 is in locked position, that is in the broken line position in Fig. 1, and is held inwardly by pushing on the push button 38 as the door is being closed, the dog arm 28<sup>a</sup> will move the lock operating member 80 downwardly but since the tongue 61 will have been moved inwardly beyond the slot 83 and into the path of a slot 88 in the top wall of the U-shaped portion 82 so that downward movement of the member 80, when tongue 61 and slot 88 are aligned, will not cause movement of the actuating member 34, and the latter will be left in broken line-locked-position.

Thus it will be seen that by placing the latch in locked position and shutting the door while the actuating member 34 is in the dotted line-locked-position shown in Fig. 1, there will be an unlocking action, but if while this member 34 is in locked position and is pushed inwardly, as by its operating push button while the door is being closed, the parts will remain locked.

From the foregoing description it will be apparent that the actuating member 34 may be moved up and down from unlocked to locked position and vice versa without moving the lock operating member 80 and that when the actuating member 34 moves, the lock member 63 will be moved up and down.

To move the lock member up or down from without the vehicle a U-shaped upper end 90 of the locking member 63 is engaged by a crank member 91 mounted on the flange 13. This crank member 91 is adapted to be rocked by a lock bar 92 which is rotatable with the core 93 in a barrel 94 of a lock when the proper key 95 is inserted and turned. The key hole for the key 95 is accessible from without the vehicle door so that access is afforded to the user who has the proper key.

The lock member 63 is held in either its up or its down position by means of a snap-over spring 96 (Fig. 4) which engages the lock member and the flange 13.

To provide for coincidental locking of doors on the same side of the vehicle a coincidental locking roller 100 is arranged on a shaft 101, which latter includes an offset body portion 102, shown as secured as by welding at 103 to the lower face of the U-shaped portion 66. The roller 100 is adapted to engage the upper or lower wings 104 and 105, respectively, of a coincidental locking control member which is indicated generally at 106 and which includes a body 107 from which a pair of tongues 108 extend.

The tongues 108 pass through a slot 109 in the pillar and are accessible within the vehicle for movement up and down to effect the locking and unlocking action. The body 107 includes tongues 107' from which the wings 104 and 105, previously mentioned, are bent. The control member 106 is mounted on a shaft 110 which is supported in brackets 111 removably secured to the inside of the pillar as by suitable screws 112. The wings with the integral connecting body 107 serve to coincidentally lock adjacent doors.

Doors on opposite sides of the vehicle may be coin-

identally locked as by a Bowden wire 113 which is suitably secured to the control members 106. To cause simultaneous action the Bowden wire is coupled to the control member 106 at the upper left hand portion of Fig. 5 to the upper side of the control member. The other end of the Bowden wire is connected to the opposite control member at the lower side thereof. Thus control members on opposite sides of the vehicle both simultaneously move in the same direction.

The coincidental locking control members 106 on the pillar take the position of the shafts 101 on closed doors. The control members 106 move to locked or unlocked position as each door is closed. The snap over springs 96 serve to hold the coincidental locking control members in position. Inertia of the moving parts carries coincidental control members 106 over center so that the springs 96 take over and pull the parts to fully locked or unlocked position.

In Figs. 8 and 9, a modification of the invention is shown. In the modification parts similar to those previously described are designated by single primed reference numerals. In the modification the arm 31 is omitted and an arm which consists of a long portion 120 arranged integral with a short portion 28' is provided so that when the long portion 120 is rocked in the manner heretofore described it will rock the short portion 28' and thus rock the arm 28' to release the latch. By providing the long portion 120 and the short portion 28' a favorable lever ratio is secured and this permits a light pressure on the push member 126 to be used to cause the bolt to be released. In the modification also the release arm 35' merely supports the actuating member 34'. The actuating member 34' is moved to bolt releasing position by a push member 125 which is pushed inwardly by a push member 126 on a handle 127. A key 128, when inserted and turned, will rotate the push member 125 so that a projection 129 on the push member will shift the member 34' to locked or unlocked position. Parts 125 to 128 may be similar to the construction shown in applicant's co-pending application Ser. No. 185,416, filed September 18, 1950 now Patent No. 2,686,419, granted August 17, 1954.

In the modification the lock bar 92 and its associated parts are omitted.

Having thus described the invention, I claim:

1. In a door latch, a movable bolt, means for holding the bolt in engagement with a strike, an actuating member, means mounting the actuating member for movement to holding means releasing position, a pivoted arm engageable with the holding means, said actuating member also being movable between an effective position in which it is operatively associated with said pivoted arm and an ineffective position in which said operative association is interrupted, said pivoted arm being movable by the actuating member to releasing position when the actuating member is in its effective position to cause the bolt holding means to be freed, said actuating member being inoperative when moved to releasing position while it is in its ineffective position to cause the arm to move the bolt holding means to free the bolt, a shiftable lock member having a sliding connection with the actuating member and operable to move said actuating member between its effective position and its ineffective position, said sliding connection permitting said actuating member to slide to holding means releasing position while the lock member remains stationary, restoring means operating by the bolt holding means upon a closing movement of the door, while the actuating member is in its ineffective position, for restoring said actuating member to its effective position, and means effective when the actuating member is in its ineffective position and is moved to its releasing position to prevent the closing movement of the door from restoring said actuating member to its effective condition.

2. In a door lock, a base having a flange thereon, a bolt pivoted on the base, a ratchet on the bolt, a dog engaging the ratchet to normally prevent release of the bolt, a release member pivotally mounted on the base for movement to and from bolt releasing position, an actuating member pivoted to the release member, said actuating member being movable to locked and unlocked positions, means whereby said actuating member causes release of the dog when the release member is moved to releasing position while the actuating member is in unlocked position, said last mentioned means being ineffective to cause release of the dog when the release member is moved while the actuating member is in locked position, a locking member movably mounted on the flange for movement to and from locking position, means to limit movement of the locking member in each direction, means to hold the locking member in either locking or in unlocking position, means accessible from within the vehicle for moving the locking member from locked to unlocked position and vice versa, means connecting the actuating member and the locking member so that the locking member moves the actuating rocking member to and from locked position, an outside lock, a member adapted to be rocked by said lock, and means spaced from the locking member and inter-connecting the actuating member and the rocking member and operated by said rocking member for moving said actuating member to and from locked position.

3. In a door lock, a base having a flange thereon and extending substantially at right angles thereto, a bolt pivoted on the base, a ratchet rigid on the bolt, holding and releasing means engaging the ratchet to normally prevent release of the bolt, a release member movably mounted on the base for movement to and from a bolt releasing position, an actuating member engageable with the release member and adapted to be moved by the release member, said release member being movable at all times to move the actuating member, said actuating member being movable between an effective position in which it is operatively associated with said holding and releasing means and an ineffective position in which said operative association is interrupted, said actuating member being movable by the release member to releasing position when the actuating member is in its effective position to cause the holding and releasing means to be freed from the ratchet, said actuating member being inoperative when moved to releasing position while it is in its ineffective position to free the bolt, a locking member disposed on the flange for movement to and from locking position, means interconnecting the actuating member and the locking member so that the locking member moves the actuating member to and from locked position, means to hold the locking member in either locked or in unlocked position, a locking arm pivoted on the flange and including a part engaging the locking member for moving the locking member to and from its locked position, means accessible from within the vehicle for moving the locking arm from locked to unlocked position and vice versa, an outside lock, a lever member rocked by said outside lock, and means operated by said lever member for causing said actuating member to be moved from locked to unlocked position.

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