Dec. 4, 1956 B. J. CRAIG 2,772,908

VEHICLE DOOR LATCH

Original Filed Dec. 18, 1950 2 Sheets-Sheet 1

Fig. 1.

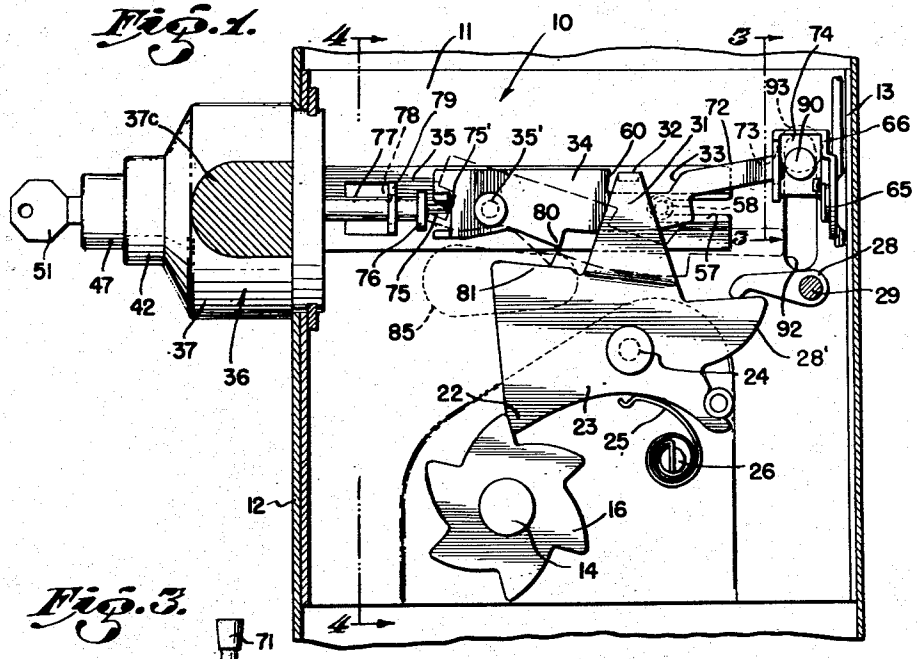


Fig. 3.

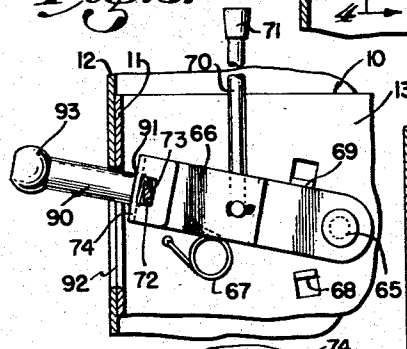


Fig. 2.

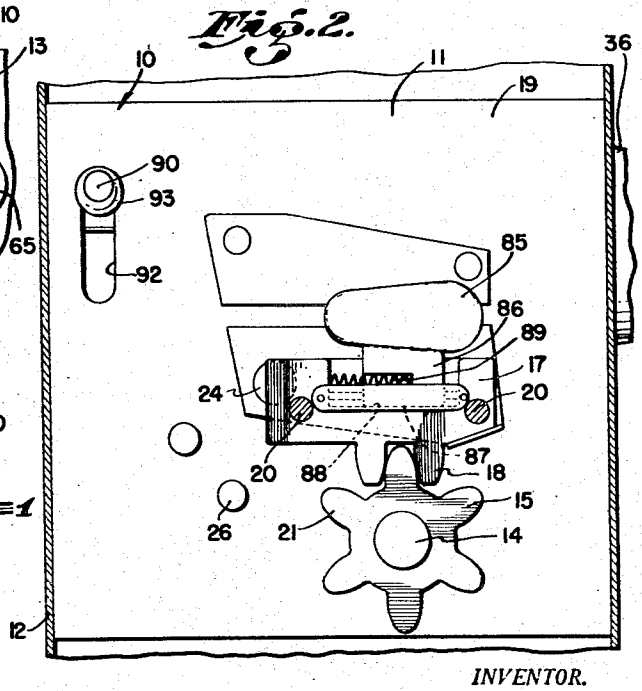
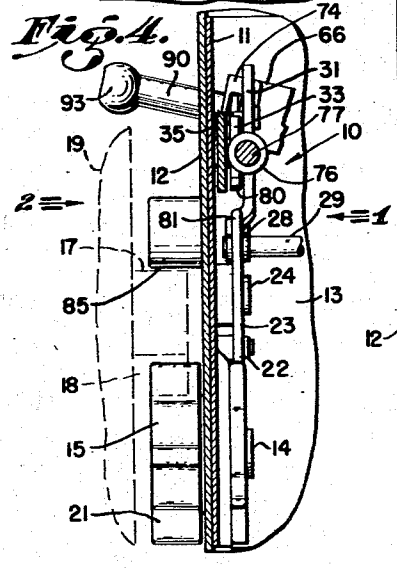


Fig. 4.



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Fig. 5.

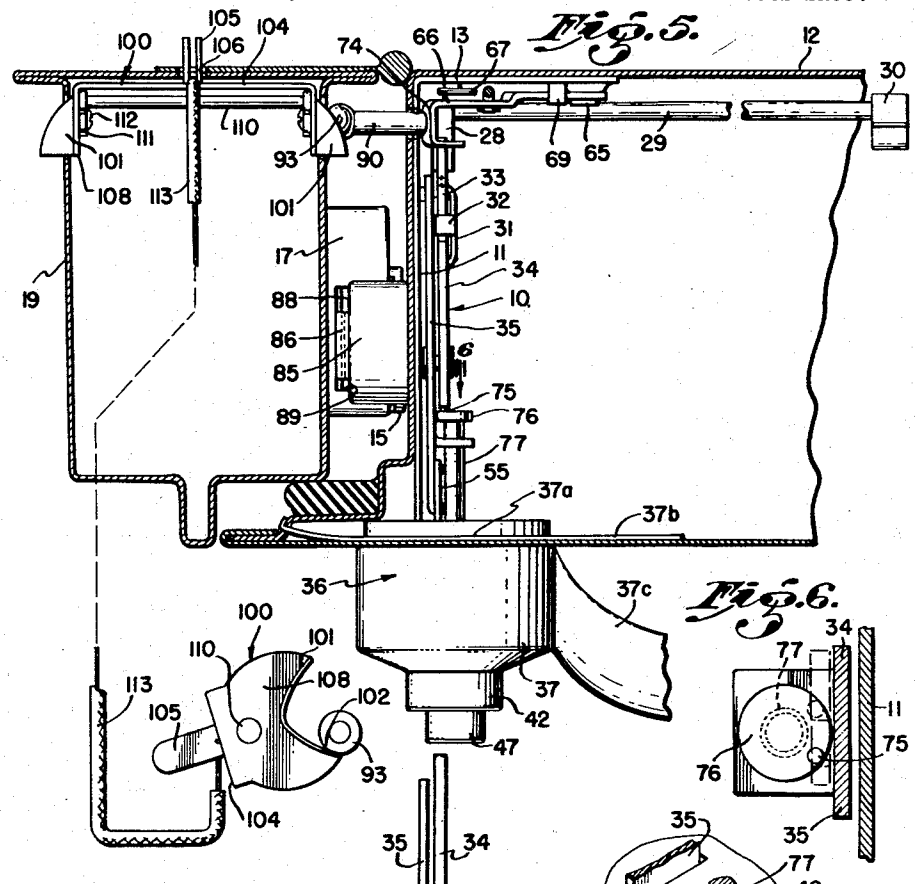


Fig. 6.

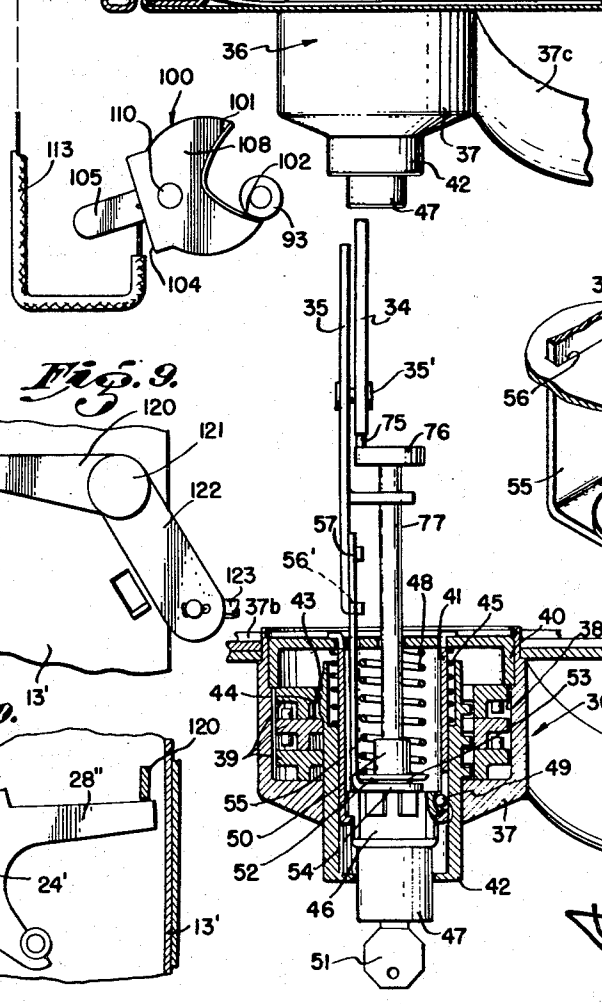


Fig. 8.

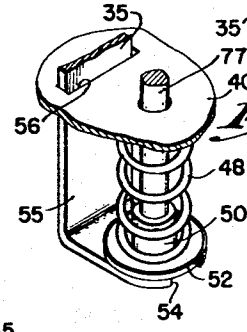


Fig. 9.

Fig. 10.

Fig. 7.

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United States Patent Office 2,772,908 Patented Dec. 4, 1956

2,772,908

VEHICLE DOOR LATCH

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Original application December 18, 1950, Serial No. 201,283, now Patent No. 2,705,884, dated April 12, 1955. Divided and this application March 7, 1955, Serial No. 492,611

3 Claims. (Cl. 292—280)

This invention relates to a vehicle door latch.

The general object of the invention is to provide an improved vehicle door latch 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 novel push button operated door lock.

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, looking towards the arrow 1 in Fig. 4, partly in section, showing the invention;

Fig. 2 is a view similar to Fig. 1, looking towards the arrow 2 in Fig. 4, and showing the opposite sides of the door latch;

Fig. 3 is a section showing the locking arm and taken on line 3—3, Fig. 1;

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

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

Fig. 6 is a section in the direction of the arrow in Fig. 5, showing the end of the lock member;

Fig. 7 is a sectional view showing the handle assembly;

Fig. 8 is a fragmentary, isometric view showing lock details;

Fig. 9 is a fragmentary side elevation, partly in section, showing a modification, and

Fig. 10 is a fragmentary front elevation showing the modification.

This application is a division of application Serial No. 201,283, filed December 18, 1950 now Patent No. 2,705,884, granted April 12, 1955. In said application Serial No. 201,283 the claims introduced were broadly drawn to both species of the invention and specifically to the species of Figs. 1 to 8. In the present application all claims are specific to Figs. 9 and 10.

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 end member, has a bolt **15** fixed thereon and at the inner face has a ratchet member **16** fixed thereon.

The rotary bolt **15** extends through an aperture in 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 is engaged by a spring **25** mounted on a fastening member **26**. The dog is thus normally urged to engaged position.

The dog **23** is shown as adapted to be rocked by an arm **28** which engages an ear **28'** on the dog **23**. The arm **28** is fixed on a shaft **29** which latter 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 raised arm **31** which has a tongue **32** extending therefrom. The tongue is normally disposed in a slot **33** in an actuating member **34**, which latter is shown as mounted on a release member **35** by means of a pivot pin **35'**.

The release member **35** is mounted on a handle assembly **36** which includes a body **37** having a reduced portion **37a** which passes through a hole in the door and is held in place by a slip plate **37b**. The body includes a handle **37c** and has a chamber **38** in which tumblers **39** are arranged. The construction includes a closure **40** which is non-rotatable and which supports a non-rotatable sleeve **41**. The tumblers **39** are rotated in sequence in the usual manner by a dial member **42** which has a key **43** fitting in a keyway **44** in one of the tumblers **39**. A spring **45** normally urges the dial **42** outwardly.

Within the sleeve **41** a lock barrel **46** slides. The lock barrel **46** includes a push button portion **47** which projects for fingertip operation. A spring **48** engages a flange **52** on the lock barrel to normally urge the push button outwardly. The lock barrel includes a ball clutch **49** which, while allowing the push member to move axially, prevents rotation of the push button. When the tumblers **39** are codified the ball will be released to permit rotation of the lock barrel **46**. Details of the ball clutch and the tumbler lock are fully disclosed and claimed in applicant's co-pending application Ser. No. 185,411, filed September 18, 1950, now Patent No. 2,687,032, granted August 24, 1954 and a further description of the clutching arrangement is deemed unnecessary.

The lock barrel supports a core **50** which is rotatable in the barrel when a proper key **51** is inserted and rotated. The flange **52** provides an annular recess **53** in which a U-shaped end **54** on the release arm **55** is arranged. The arm **55** extends perpendicular to the U-shaped end **54** and extends through a slot **56** in the closure **40**.

The slot **56** is only slightly larger in cross section than the cross section of the release arm **55** so that the arm **55** is limited to move linearly parallel to the axis of the lock barrel and when the push button is pushed inwardly the arm **55** will move in and will move outwardly when the spring **48** returns the push button.

The release arm **55** is rigidly connected to the release member **35** by tongues **57** which are integral with the release member **35** and which pass through holes **56'** in the arm **55**. Thus it will be seen that the release member **35** will move in and out with the push button but that this member will not rotate with the lock barrel **46** nor with the dial member **42**.

A slot **57'** in the release member **35** receives a guide pin **58** on the base **11** to guide the free end of the release member.

The construction is such that when the push button **47** is pushed inwardly the release member **35** will be pushed inwardly and will carry forward the pivot **35'** on the actuating member and will move the actuating member to the right in Fig. 1. This will cause the wall portion **60** of the slot **33** to engage the tongue **32** on the dog arm **31**. This will rock the dog to free the ratchet **16** and allow the bolt **15** to rotate so that the door may be opened.

The actuating member **34** may be moved from the unlocked position shown in full lines in Fig. 1 to the locked position shown in broken lines in Fig. 1 and in order to do this the flange **13** carries a pivot pin **65** which pivotally supports a locking arm **66**. The flange includes a snap

over spring 67 which holds the locking arm 66 against a lower stop 68 when the door is locked and against a stop 69 when the door is unlocked. The locking arm 66 may be shifted by a rod 70 which is attached thereto and which has an upper finger engaging portion 71 which is accessible from within the vehicle. The actuating member 34 has a tongue 72 at its free end. The tongue 72 fits in a slot 73 in a U-shaped portion 74 on the locking member.

When the finger member 71 is pushed downwardly the actuating member tongue 72 will move the actuating member 34 from unlocked to locked position and when the finger member 71 is raised the actuating member will be raised from locked to unlocked position.

Also, the actuating member 34 may be shifted from locked to unlocked position and vice versa by means of an arm 75 which is mounted on the core 50 of the lock barrel. The arm 75 operates in a slot 75' in the actuating member 34. As shown in Fig. 7, the arm is mounted as a crank member on a head 76 carried on the rod 77 which is mounted on and rotates with the lock core 50. The rod 77 passes through a hole 78 in a tongue 79 bent from the release member 35.

The construction is such that when the proper key 51 is inserted it will rock the core 50, thus rocking the pin 75 and moving the actuating member 34 upwardly or downwardly depending on which direction the key is turned.

Also, the rod 77 may be rotated by codifying the tumblers 39 and pushing in on the dial 42 to free the ball clutch 49. This will permit the push button 47 to turn independently of, and without use of, the key 51.

Thus it will be seen that an operator may either lock or unlock the vehicle from without the vehicle by operating the finger member 71 or may lock or unlock the door from without the vehicle by means of the key 51 or the dial member 42.

To prevent the operator from locking himself out of the vehicle when the door is closed while the actuating member 34 is in locked position, the actuating member is provided with a cam 80 which, when the actuating member is locked, is disposed (as shown in dotted lines in Fig. 1) adjacent to a portion 81 on the dog 23. The arrangement of the parts is such that when the actuating member 34 is in this locked position and the door is closed the ratchet 16 will be rotated, thus lifting the dog in Fig. 1 and causing the portion 81 to move upwardly and forwardly to thus lift the actuating member 34 to unlocked position.

If, however, the operator desires to lock the vehicle he may push down on the finger member 71, thus placing the actuating member in locked position and then as the door is closed, he will push inwardly on the push button 47. In doing this he will move the cam portion 80 forwardly in Fig. 1 so that when the part 81 is raised due to rocking of the dog 23 there will be no engagement of the part 80 with the part 81 and thus the cam 80 will be undisturbed and the actuating member will remain in locked position.

The strike 17 coacts with a wedge member 85 which preferably consists of a stamping and is fully described in applicant's co-pending application Ser. No. 201,281 filed December 18, 1950, now Patent No. 2,705,882, granted April 12, 1955. The bottom of the wedge member 85 engages a dovetail wedge 86 which has a plane lower face 87 slidably engaging a similar face 88 on the strike. A spring 89 normally urges the wedge member to the right in Fig. 2 towards the shoulder 89' on the strike. The wedge member is more fully described in the co-pending application mentioned in this paragraph.

In order to provide for coincidental locking of the several doors of a vehicle the locking arm 66 is provided with a shaft member 90 which may be secured thereon as by welding at 91. The shaft member projects through a slot 92 in the base 11 and in the end of the door and at its outer end supports a roller 93. The construction is such that when the locking member 66 is moved up or down the roller 93 will be moved up or down.

To provide coincidental locking of doors on the same side of the vehicle and on opposite sides of the vehicle, the pillars 19 are provided with a coincidental locking control member 100 which has upper and lower wings 101 and 102 at each end. The control member includes a body 104 from which a pair of tongues 105 extend through a slot 106 in the pillar and are accessible from within the vehicle for movement up and down to effect the locking and unlocking action.

The body 104 includes tongues 108 from which the wings 101 and 102, previously mentioned, are bent. The control member 100 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 104 serve to coincidentally lock adjacent doors. Doors on opposite sides of the vehicle may be coincidentally locked as by a Bowden wire 113 which is suitably secured to the control members 100. To cause simultaneous action one end of the Bowden wire is coupled to the top portion of the control member 100 at the upper left hand portion of Fig. 5. The other end of the Bowden wire is connected to the bottom portion of the other control member. Thus control members on opposite sides of the vehicle both simultaneously move in the same direction.

In the modification shown in Figs. 9 and 10 the inside remote control rod 29 is omitted. The dog ear 28' is extended as at 28'' and is engaged by an arm 120, which is pivoted at 121 to the flange 13'. The arm 120 is rocked by an integral arm 122 which is connected by a rod 123 to an inside remote control handle (not shown). When the rod 123 is pulled to the right in Fig. 9 the arm 120 will rock the ear 28'' on the dog to bolt releasing position.

Having thus described the invention, I claim:

1. In a door lock, a base having a flange arranged at right angles thereto, a bolt pivoted on the base to rotate about an axis perpendicular to the base, a ratchet coaxial with the bolt pivot, bolt holding and releasing means engaging the ratchet for holding the bolt in engagement with a strike, a movably mounted release member, an actuating member, pivotal means supporting the actuating member on the release member, the actuating member being movable in a path to and from a locked position, the actuating member also being movable with the release member in a bolt releasing path, said holding and releasing means having an arm which has a tongue extending therefrom, said actuating member having a shoulder thereon, said tongue being normally disposed out of the path of the shoulder on the actuating member when the actuating member is in its locked position, said tongue being disposed in the path of said actuating member shoulder when the actuating member is in unlocked position for movement by the release member to bolt releasing position, means for moving the release member to bolt releasing position, a locking arm, means pivotally supporting the locking arm on the flange, means to hold the locking arm in either locking or in unlocking position, means including a shiftable member which has an upper finger engaging portion accessible from within the vehicle for moving the locking arm from locked to unlocked position and vice versa, the actuating member having a tongue at its free end, said tongue fitting in a slot on the locking arm for moving the locking arm to and from locked position, said actuating member being effective to free the bolt holding and releasing means when it is moved while the locking arm is in unlocked position and said actuating member being ineffective to release the bolt holding and releasing means when it is moved while the locking arm is in unlocked position, said holding and releasing means including an ear directed towards said flange, an arm pivoted on said flange, the axis of said last mentioned arm being perpendicular to the flange, said arm including a portion engaging said

ear, remote control means within the vehicle for rocking the last mentioned arm to move the holding and releasing means to bolt releasing position, said actuating member including a shoulder facing towards the ratchet and engageable with a portion of the holding and releasing means which faces away from the ratchet when the actuating member is in non-bolt releasing position and operable when the bolt is turned by engagement with a strike to restore the actuating member to unlocked position, said shoulder being disposed so that it is out of the path of the holding and releasing means portion which faces away from the ratchet and is inoperable, when the actuating member is in locked position and is held in bolt releasing position, when the bolt is turned by engagement with a strike to move the actuating member to unlocked position.

2. In a door lock, a base having a flange arranged at right angles thereto, a bolt pivoted on the base to rotate about an axis perpendicular to the base, a ratchet coaxial with the bolt pivot, bolt holding and releasing means engaging the ratchet for holding the bolt in engagement with a strike, a movably mounted release member, an actuating member, pivotal means supporting the actuating member on the release member, the actuating member being movable in a path to and from a locked position, the actuating member also being movable with the release member in a bolt releasing path, said actuating member having a shoulder thereon, said holding and releasing means having an upwardly directed arm which has a terminal tongue extending therefrom, said tongue being normally disposed out of the path of the shoulder on the actuating member when the actuating member is in its locked position, said tongue being disposed adjacent to and in the path of said actuating member shoulder when the actuating member is in unlocked position for movement by the release member to bolt releasing position, means for moving the release member to bolt releasing position, a pivot pin on said flange, a locking arm pivotally supported by the pivot pin, means to limit movement of the locking arm in each direction, means to hold the locking arm in either locking or in unlocking position, means including a shiftable member which has an upper finger engaging portion accessible from within the vehicle for moving the locking arm from locked to unlocked position and vice versa, the actuating member having a tongue at its free end, said tongue fitting in a slot on the locking arm for moving the locking arm to and from locked position, said actuating member being effective to free the bolt holding and releasing means when it is moved while the locking arm is in unlocked position and said actuating member being ineffective to release the bolt holding and releasing means when it is moved while the locking arm is in unlocked position, said holding and releasing means including an ear directed towards said flange, an arm pivoted on said flange, the axis of said last mentioned arm being perpendicular to the flange, said arm including a portion engaging said ear, remote control means within the vehicle for rocking the last mentioned arm to move the holding and releasing means to bolt releasing position, said actuating member including a shoulder facing towards the ratchet and engageable with a portion of the holding and releasing means which faces away from the ratchet when the actuating member is in non-bolt releasing position and operable when the bolt is turned by engagement with a strike to restore the actuating member to unlocked position, said shoulder being disposed so that it is out of the path of the holding and releasing means portion which faces away from the ratchet and is inoperable, when the actuating member is in locked position and is held in bolt releasing position, when the bolt is turned by engagement with a strike to move the actuating member to unlocked position.

3. In a door lock, a base having a flange arranged at right angles thereto, a bolt pivoted on the base to rotate about an axis perpendicular to the base, a ratchet coaxial with the bolt pivot, bolt holding and releasing means engaging the ratchet for holding the bolt in engagement with a strike, a movably mounted release member, an actuating member, pivotal means supporting the actuating member on the release member, the actuating member being movable in a path to and from a locked position, the actuating member also being movable with the release member in a bolt releasing path, said holding and releasing means having an upwardly raised arm which has a terminal tongue extending inwardly therefrom, said actuating member having a shoulder thereon, said tongue being normally disposed out of the path of the shoulder on the actuating member when the actuating member is in its locked position, said tongue being disposed adjacent to and in the path of said actuating member shoulder when the actuating member is in unlocked position for movement by the release member to bolt releasing position, means for moving the release member to bolt releasing position, a pivot pin on said flange, a locking arm pivotally supported by the pivot pin, said locking arm including a portion engageable with upper and lower stop portions on the flange to limit movement of the locking arm in each direction, a snap-over spring engaging the locking arm and the flange to hold the locking arm in either locking or in unlocking position, means including a shiftable member which has an upper finger engaging portion accessible from within the vehicle for moving the locking arm from locked to unlocked position and vice versa, the actuating member having a tongue at its free end, said tongue fitting in a slot on the locking arm for moving the locking arm to and from locked position, said actuating member being effective to free the bolt holding and releasing means when it is moved while the locking arm is in unlocked position and said actuating member being ineffective to release the bolt holding and releasing means when it is moved while the locking arm is in locked position, said holding and releasing means including an ear directed towards said flange, an arm pivoted on said flange, the axis of said last mentioned arm being perpendicular to the flange, said arm including a portion engaging said ear, remote control means within the vehicle for rocking the last mentioned arm to move the holding and releasing means to bolt releasing position, said actuating member including a shoulder facing towards the ratchet and engageable with a portion of the holding and releasing means which faces away from the ratchet when the actuating member is in non-bolt releasing position and operable when the bolt is turned by engagement with a strike to restore the actuating member to unlocked position, said shoulder being disposed so that it is out of the path of the holding and releasing means portion which faces away from the ratchet and is inoperable, when the actuating member is in locked position and is held in bolt releasing position, when the bolt is turned by engagement with a strike to move the actuating member to unlocked position.

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