Nov. 17, 1953 B. J. CRAIG 2,659,230

COINCIDENTAL DOOR LOCKING SYSTEM

Filed July 7, 1949 4 Sheets-Sheet 1

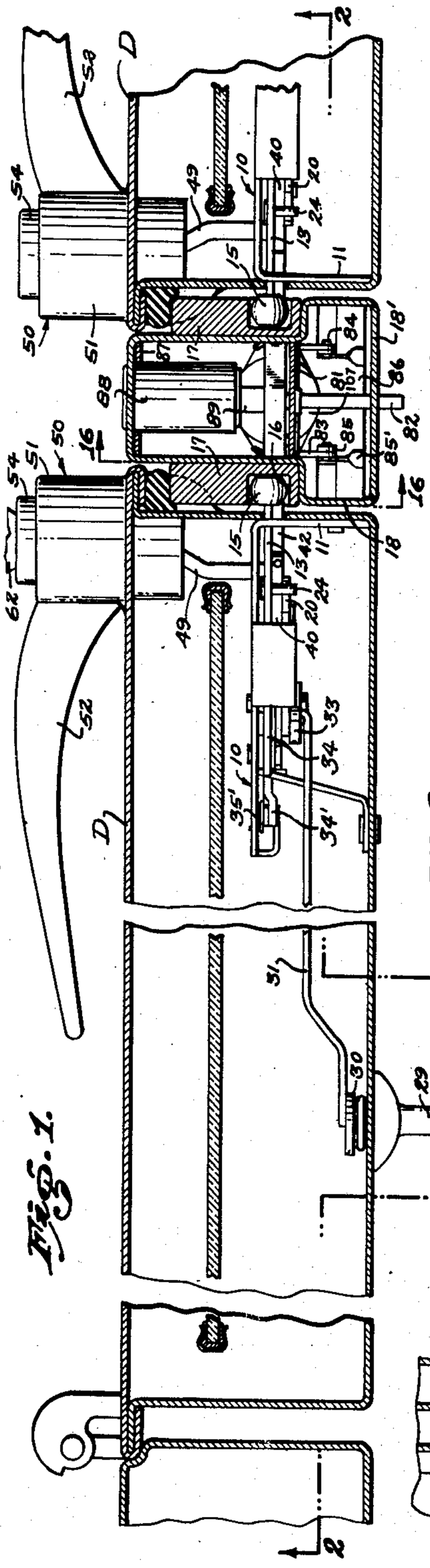


Fig. 1.

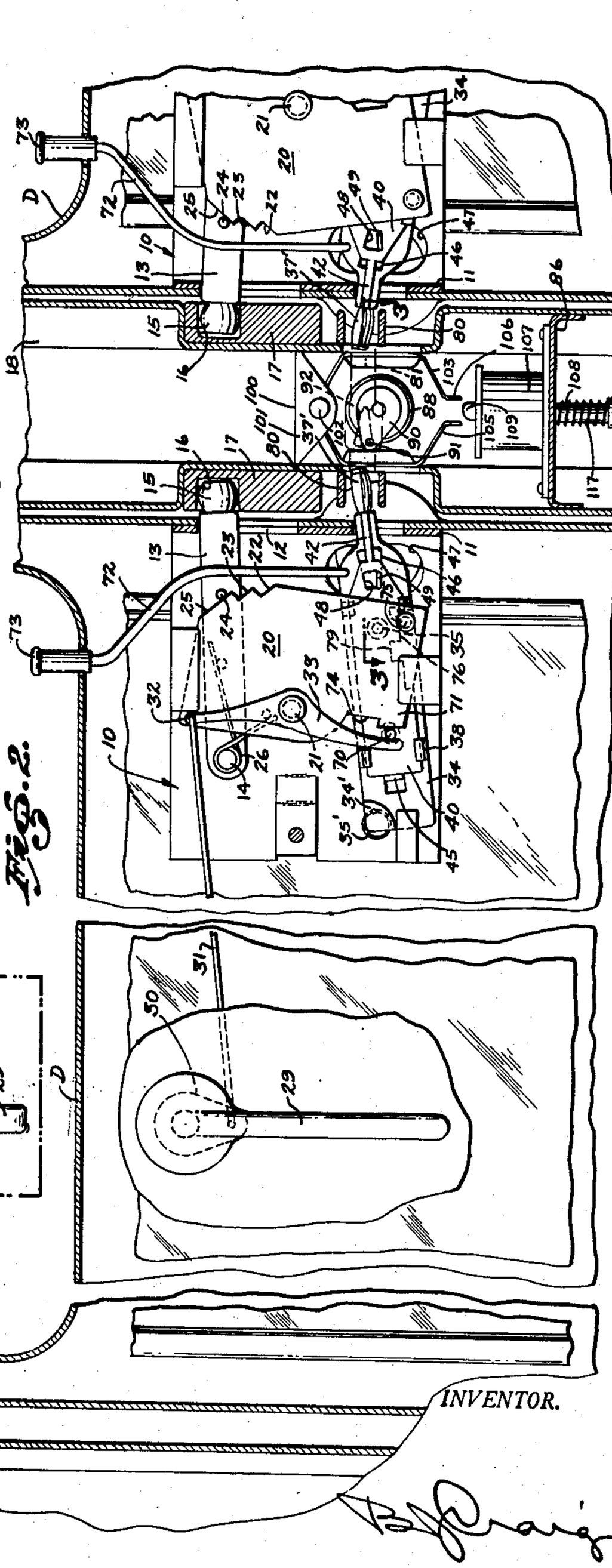


Fig. 2.

INVENTOR.

B. J. Craig

Nov. 17, 1953 B. J. CRAIG 2,659,230

COINCIDENTAL DOOR LOCKING SYSTEM

Filed July 7, 1949 4 Sheets-Sheet 2

Fig. 3.

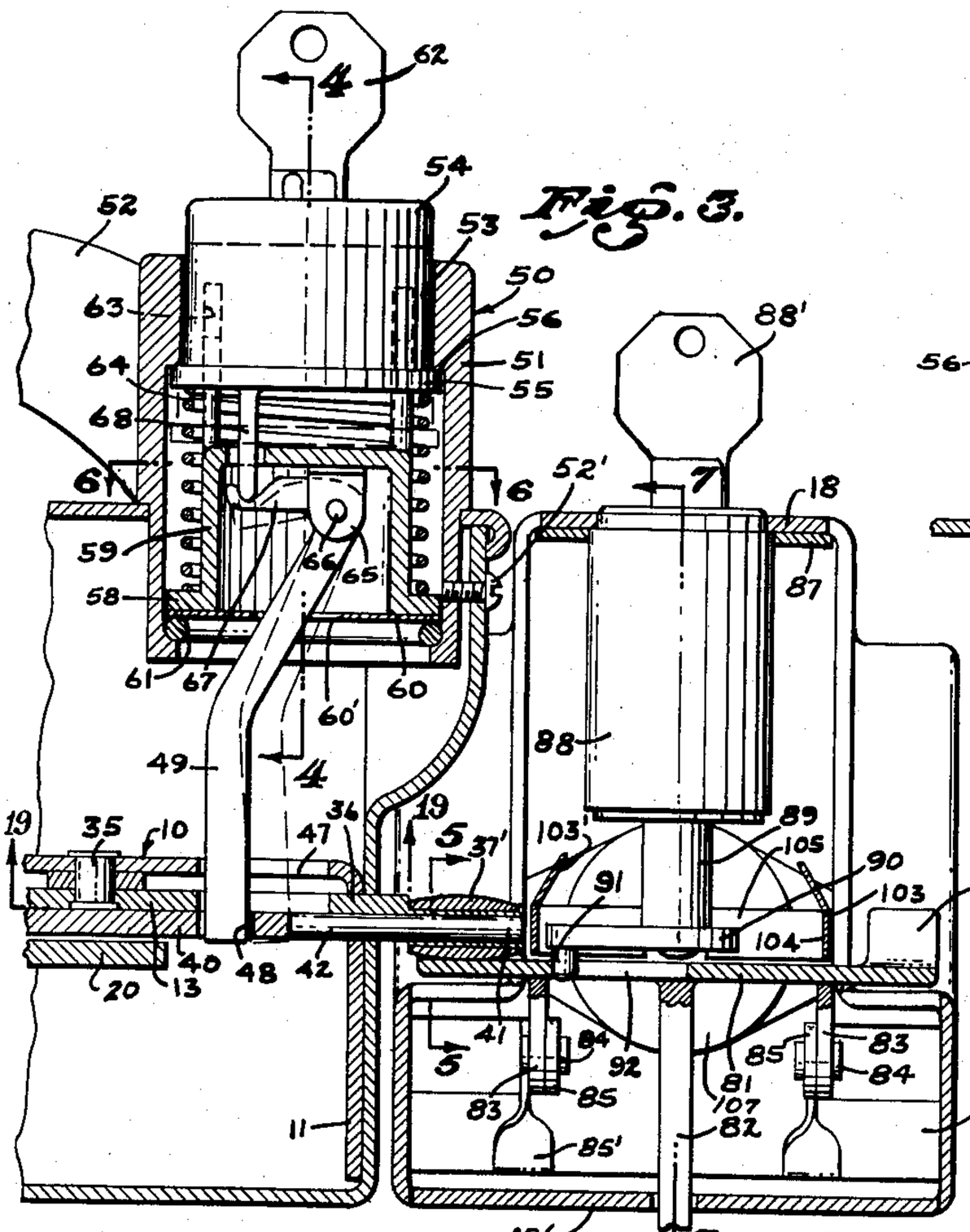


Fig. 4.

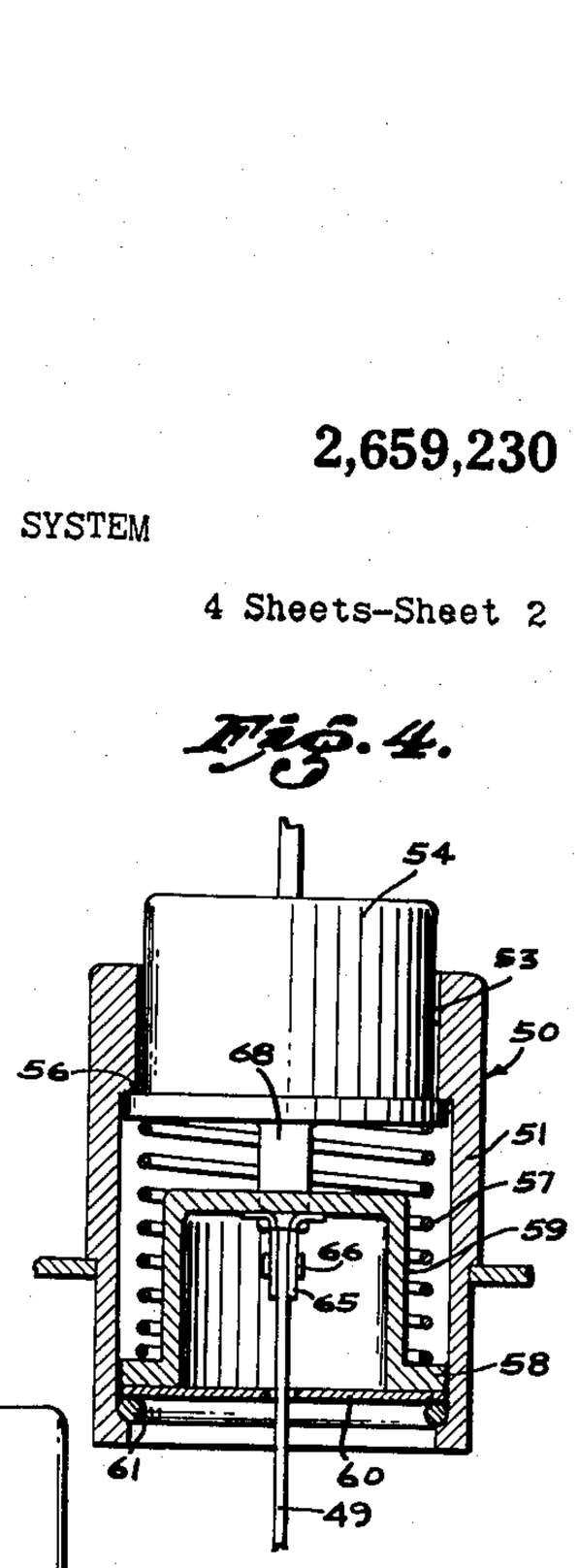


Fig. 5.

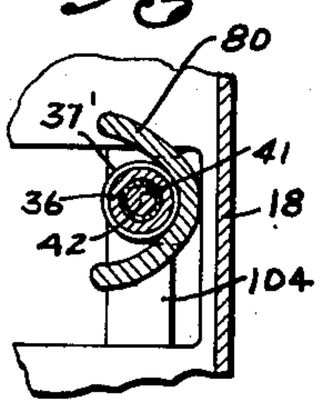


Fig. 7.

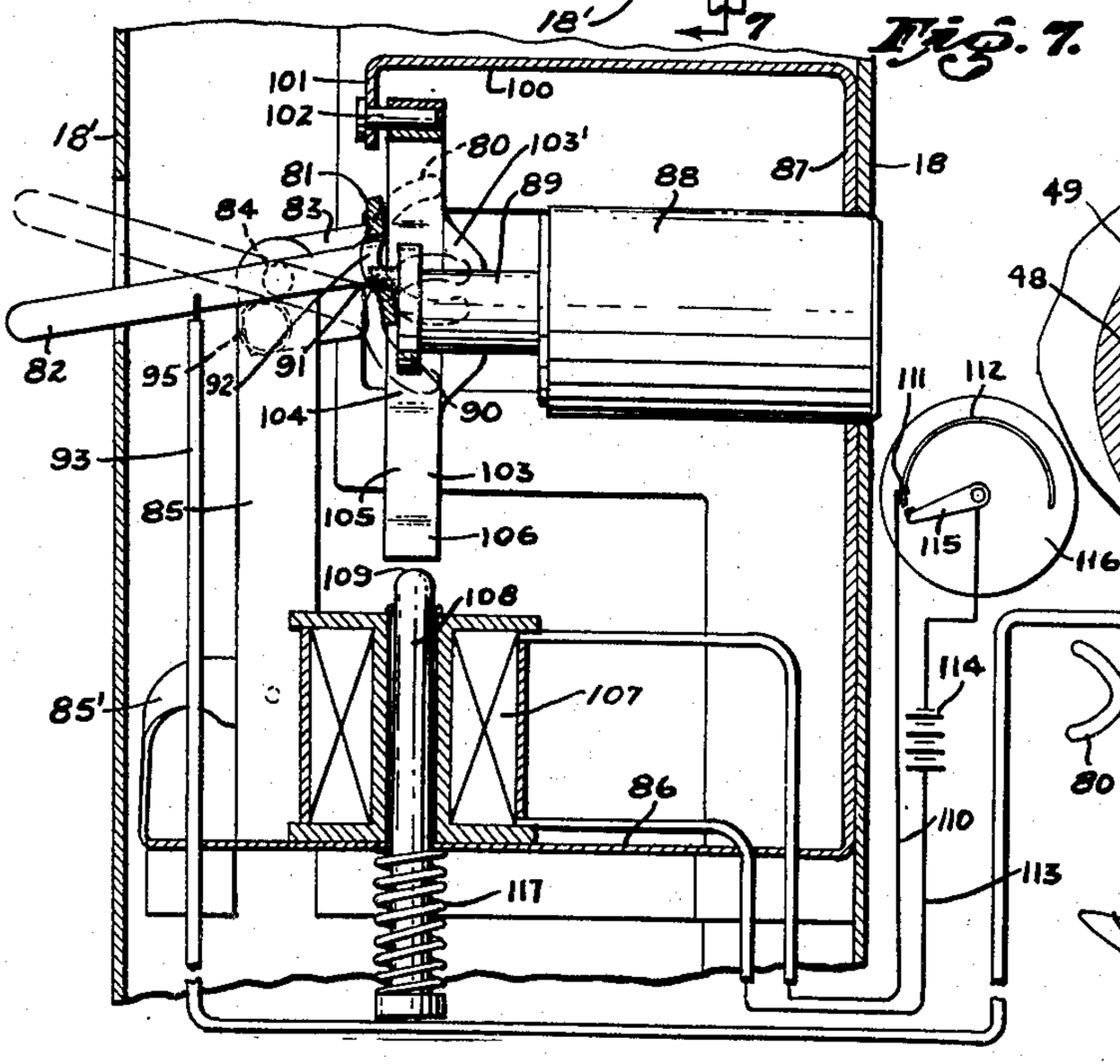
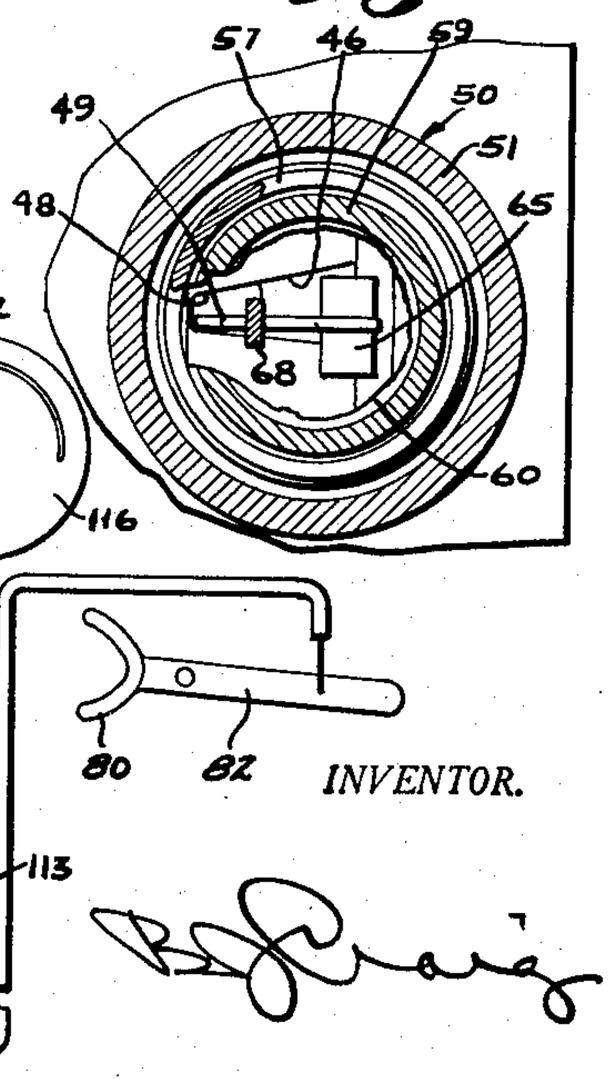


Fig. 6.



INVENTOR.

B. J. Craig

Nov. 17, 1953 B. J. CRAIG 2,659,230

COINCIDENTAL DOOR LOCKING SYSTEM

Filed July 7, 1949 4 Sheets-Sheet 3

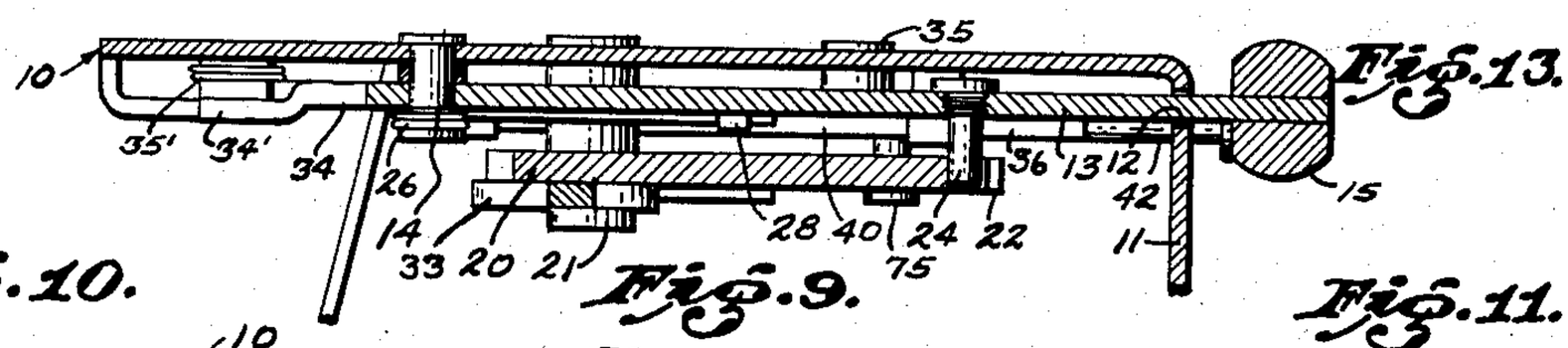
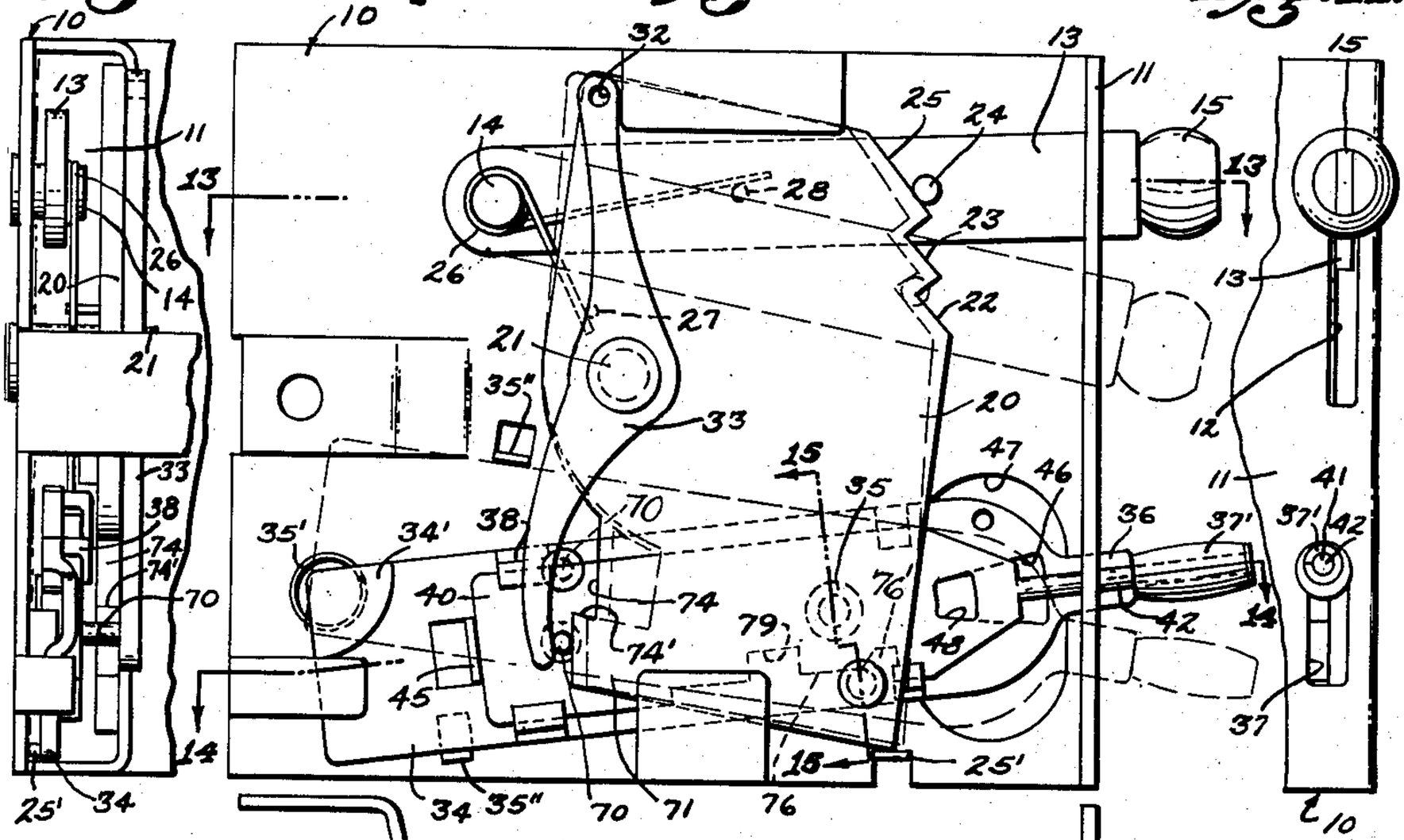


Fig. 13.

Fig. 10.

Fig. 9.

Fig. 11.



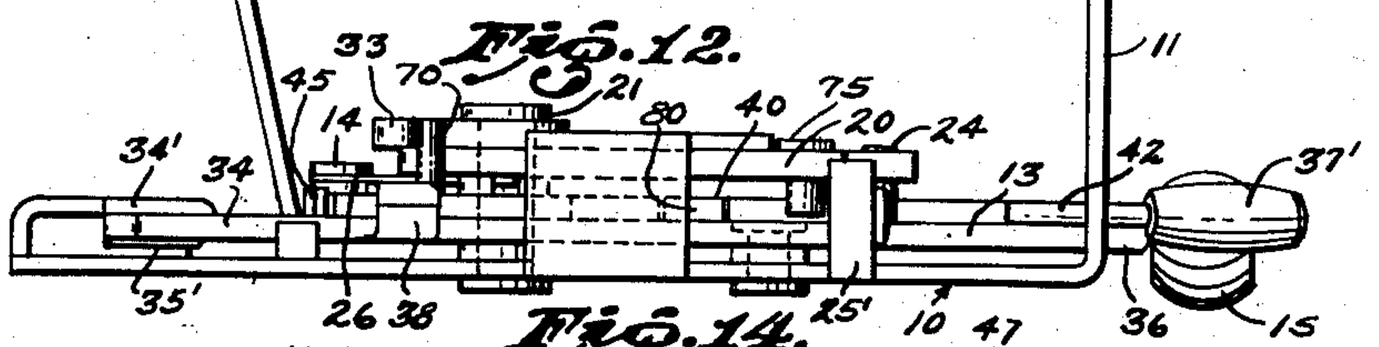


Fig. 12.

Fig. 14.

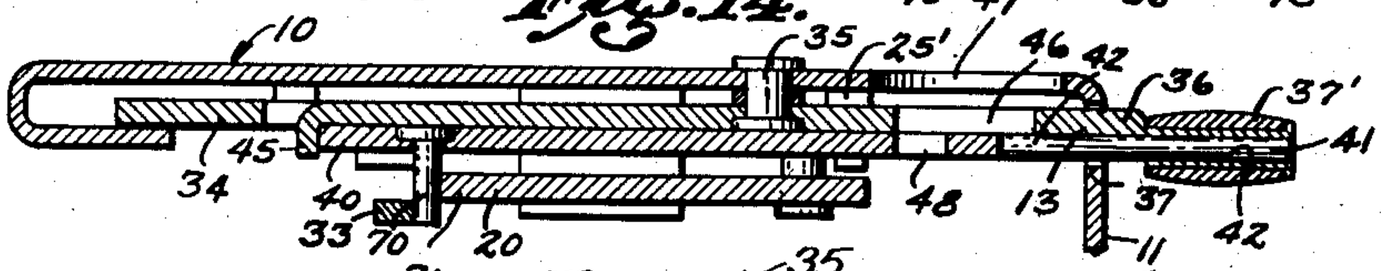
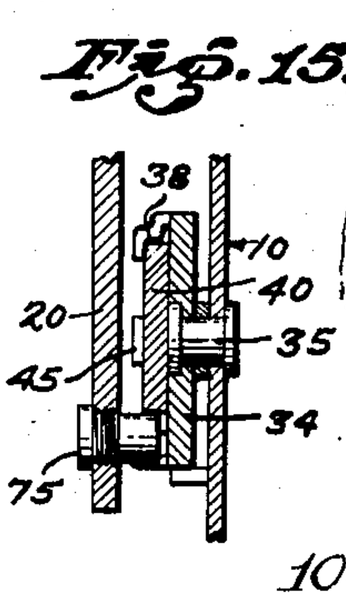


Fig. 15.



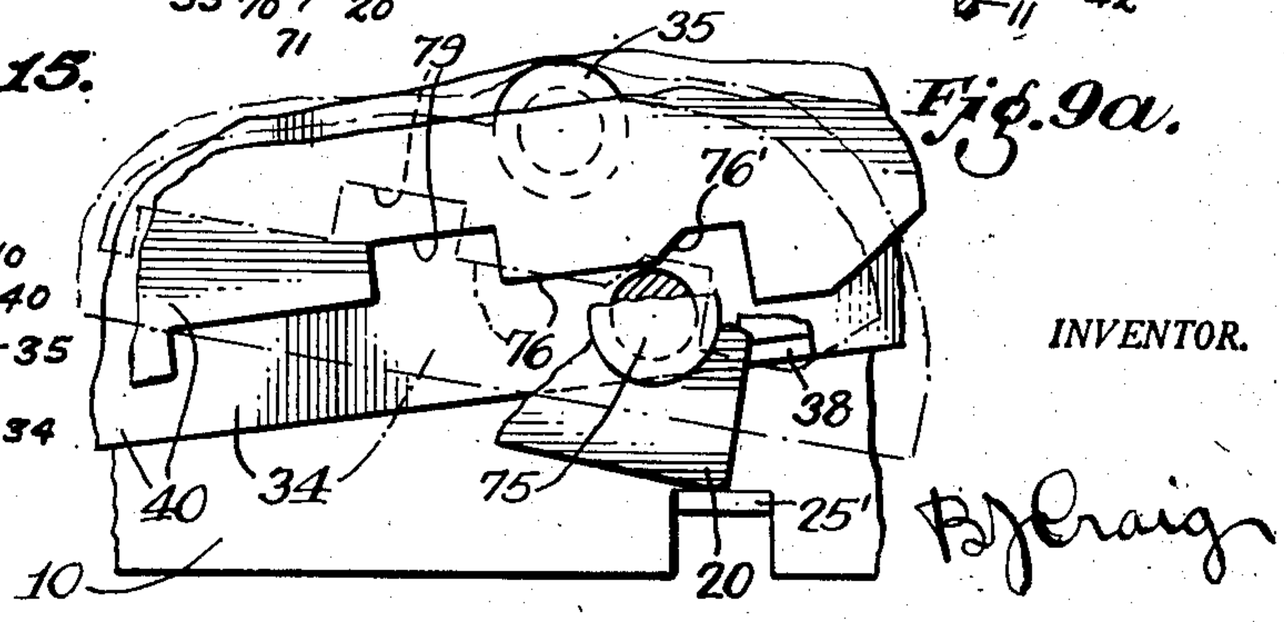


Fig. 9a.

INVENTOR.

B. J. Craig

Nov. 17, 1953 B. J. CRAIG 2,659,230

COINCIDENTAL DOOR LOCKING SYSTEM

Filed July 7, 1949 4 Sheets-Sheet 4

Fig. 16.

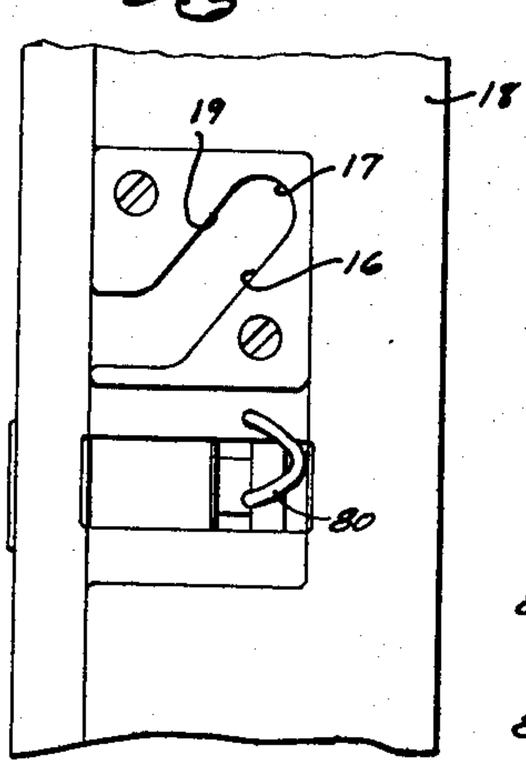


Fig. 8.

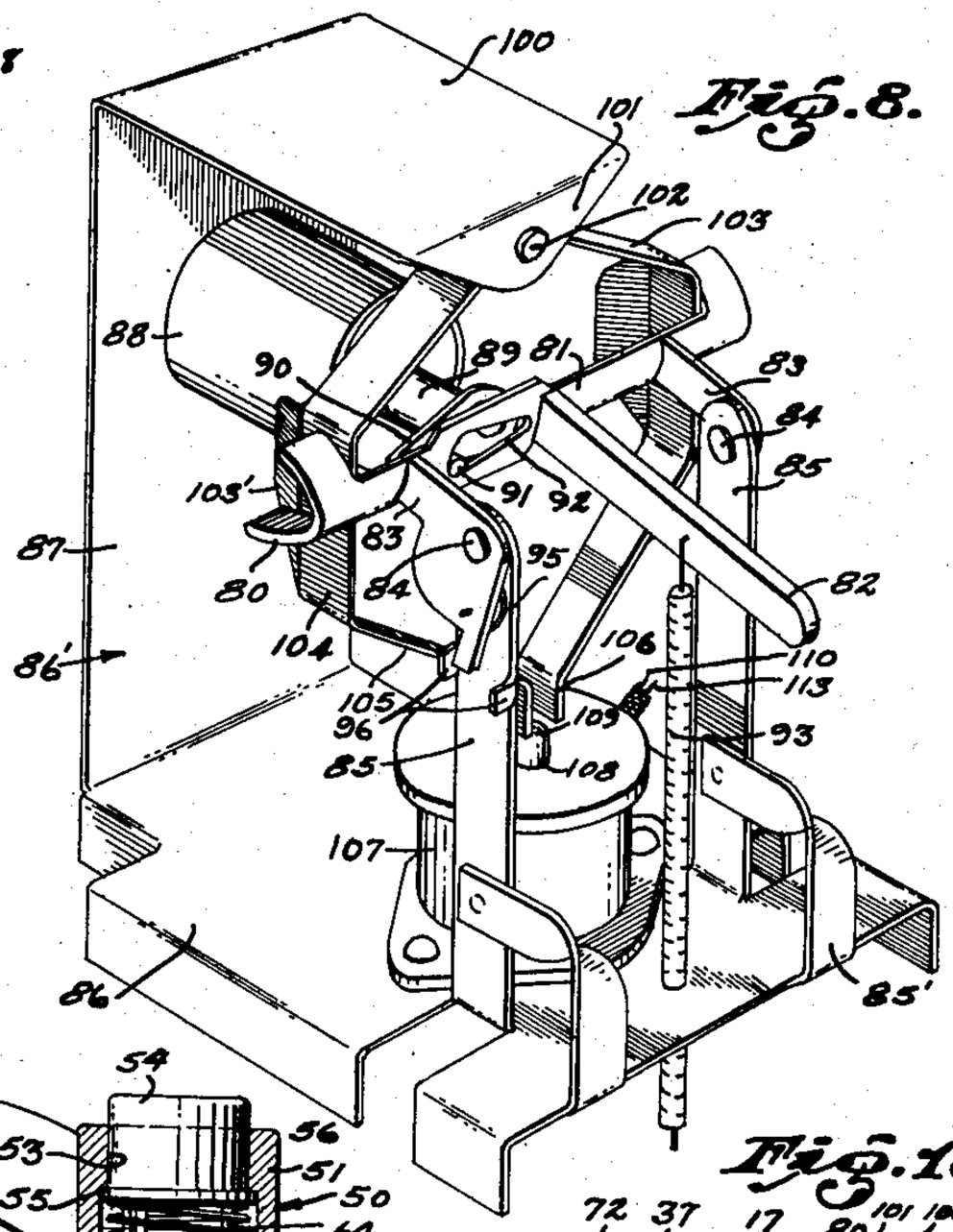


Fig. 17.

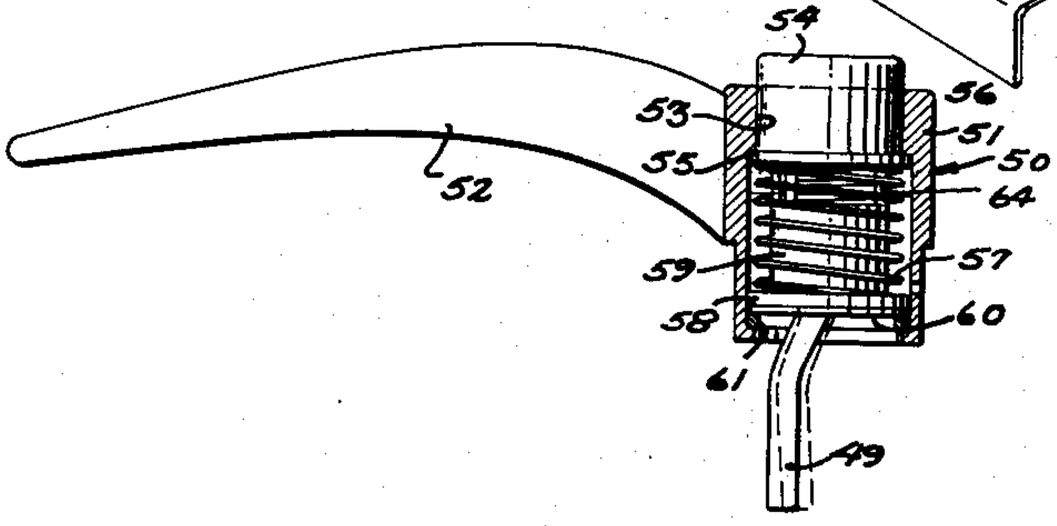


Fig. 18.

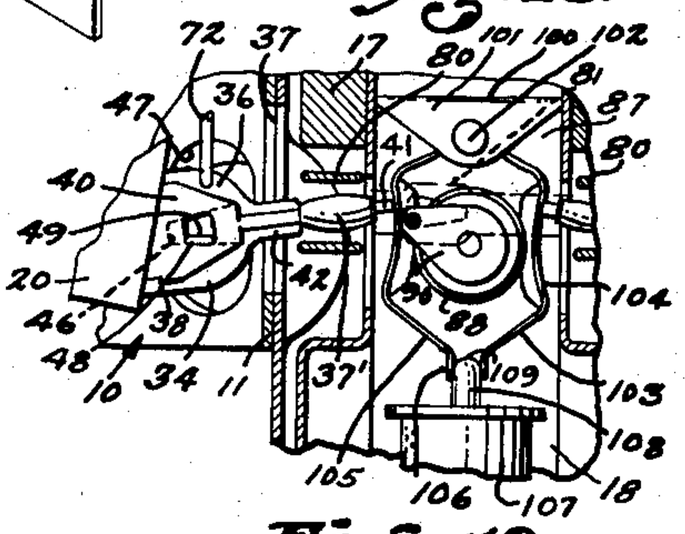


Fig. 20.

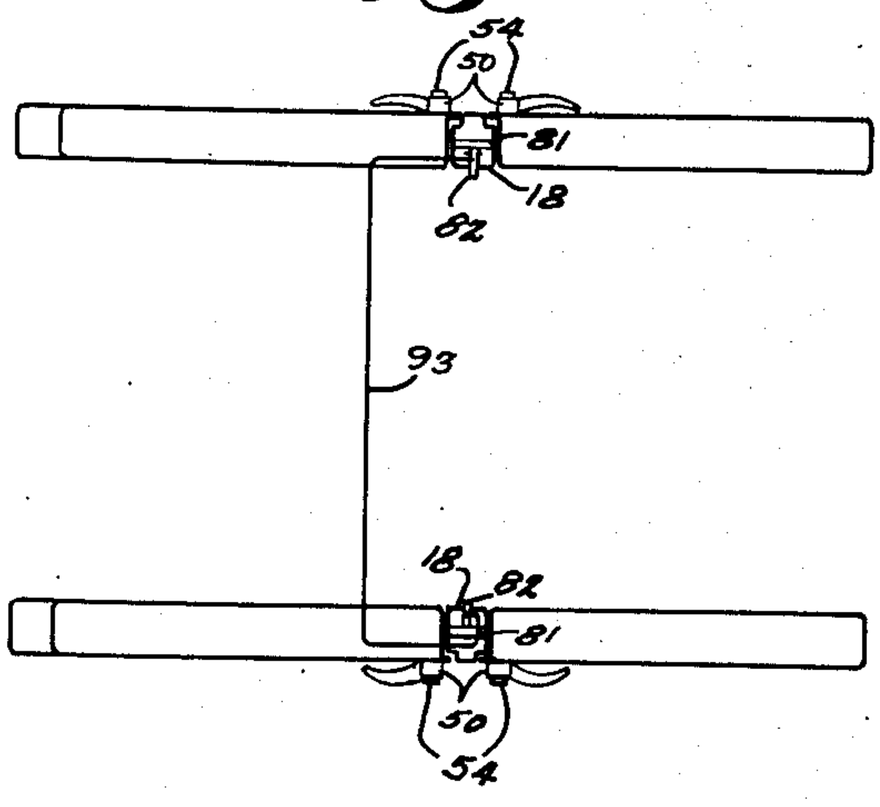
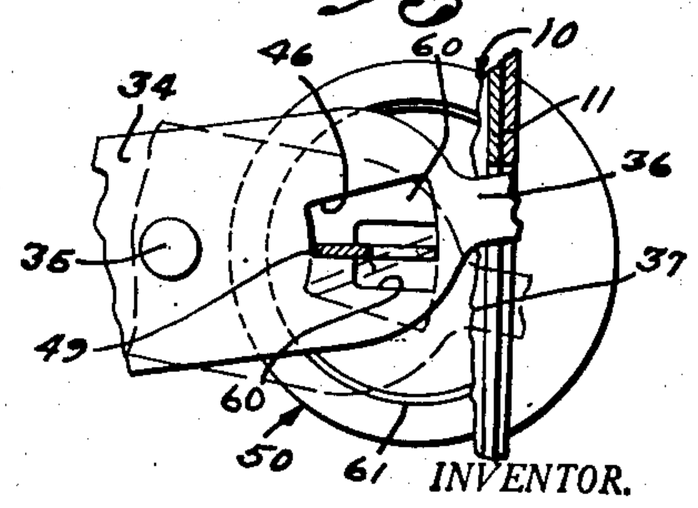


Fig. 19.



INVENTOR.

B. J. Craig

Patented Nov. 17, 1953

2,659,230

UNITED STATES PATENT OFFICE

2,659,230

COINCIDENTAL DOOR LOCKING SYSTEM

Burnie J. Craig, Los Angeles County, Calif.

Application July 7, 1949, Serial No. 103,431

11 Claims. (Cl. 70—264)

1

This invention relates to a coincidental vehicle door locking system.

The general object of the invention is to provide an improved vehicle door lock by means of which the several doors of an automotive vehicle may be simultaneously locked.

A more specific object of the invention is to provide a coincidental door locking system including novel means for locking a plurality of the doors of an automotive vehicle and wherein novel speed responsive means controls the operation of the release of the latches which hold the doors closed.

Another object of the invention is to provide a door locking system wherein novel latch members are employed.

Another object of the invention is to provide a novel door locking system including novel means for coincidentally causing a plurality of the doors to be either locked or unlocked.

Another object of the invention is to provide a coincidental door locking system wherein novel means mounted upon each of several doors permits locking of all of the several doors.

Another object of the invention is to provide a coincidental door locking system including novel locking means mounted upon the pillars of the vehicle on which the doors are mounted.

Another object of the invention is to provide door securing means wherein locking means for the securing means is mounted upon the door and also upon the pillar of the body on which the door is mounted.

Another object of the invention is to provide a novel latch construction including novel speed control means for releasing the latch.

Another object of the invention is to provide a novel door latch handle assembly.

Another object of the invention is to provide a novel latch bolt assembly.

Another object of the invention is to provide a novel key-controlled lock assembly.

Another object of the invention is to provide a door latch including latch releasing means and locking means operable in a novel manner by manipulation of a manual member while the latch is in locked position and the door is shut to cause the latch to be unlocked or locked, depending upon the position of the manual member when the door is closed.

Another object of the invention is to provide a novel coincidental door locking means mounted upon the pillar wherein the locking means may be operated from without the vehicle to locked and unlocked positions by a key and may be operated to the same positions from within by means of a manual member.

2

Another object of the invention is to provide a novel speed control member for rendering the release of the door latch effective when the vehicle speed exceeds a certain rate and permitting normal, easy opening when the vehicle speed is at less than the previously mentioned rate.

Another object of the invention is to provide a novel push button operated latch release member.

Another object of the invention is to provide a novel push button latch release member and wherein the push button includes a novel key-operated locking member.

Another object of the invention is to provide a novel bolt catch member for an automotive vehicle door latch.

Another object of the invention is to provide a novel catch member and locking member for an automotive vehicle door latch.

Another object of the invention is to provide an automotive vehicle door latch including novel bolt locking and latch releasing members.

Another object of the invention is to provide an automotive vehicle door latch including novel locking and latch releasing members.

Another object of the invention is to provide a vehicle door latch including a novel locking member which is movable from locked to unlocked positions and which carries directly thereon a novel latch releasing member which is movable to release the door latch when the locking member is in one position and is ineffective to release the latch when moved by the locking member which is in another position.

Another object of the invention is to provide a vehicle door latch including a pivoted locking member having a catch releasing member movably mounted thereon and wherein novel means accessible from the exterior and/or the interior of the door permits the latch to be locked or unlocked and wherein inside and outside means permits the latch to be released, with the outside means at times inoperative to release the latch while the inside means is at all times operable to release the latch.

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

Fig. 1 is a horizontal, fragmentary, sectional view through a pair of automotive vehicle doors, showing the invention;

Fig. 2 is a section taken on line 2—2, Fig. 1;

Fig. 3 is a horizontal, fragmentary section taken through the door handle and associated door and pillar portion;

Fig. 4 is a section taken on line 4—4, Fig. 3;

Fig. 5 is a fragmentary section taken on line 5—5, Fig. 3;

Fig. 6 is a fragmentary section taken on line 6—6, Fig. 3;

Fig. 7 is a section taken substantially on line 7—7, Fig. 3, with parts shown diagrammatically and for clarity some parts are shown in elevation;

Fig. 8 is a perspective view showing the speed control and locking assembly;

Fig. 9 is an elevation view showing the latch assembly;

Fig. 9a is an enlarged fragmentary view of a portion of the latch assembly;

Fig. 10 is a left hand end view of the latch assembly;

Fig. 11 is a right hand end view of the latch assembly;

Fig. 12 is a bottom view looking upwardly—showing the latch assembly;

Fig. 13 is a section taken on line 13—13, Fig. 9;

Fig. 14 is a section taken on line 14—14, Fig. 9;

Fig. 15 is a fragmentary section taken on line 15—15, Fig. 9;

Fig. 16 is a fragmentary face view showing the pillar and strike members taken on line 16—16, Fig. 1;

Fig. 17 is a side elevation, with parts in section, showing the handle assembly;

Fig. 18 is a sectional detail showing operating of the speed control feature;

Fig. 19 is a plan view, partly in section, showing portions of the handle, releasing arm and associated parts; and

Fig. 20 is a diagrammatic view.

The latches disclosed in this application are of the type wherein a push button, lock operated, member associated with a vehicle door handle serves to release the latch. This type of latch is described and claimed in Craig Patent No. 2,204,208, granted June 11, 1940, and operation is on the principle of rendering an outside door push button ineffective to release the bolt by use of members mounted for dual movement and wherein the bolt is released when a release member is moved in one direction while another member is turned to one position and wherein the bolt will not be released when the release member is similarly moved while the second member is moved to another position and wherein locking may be effected without a key by operation of a manual member while the door is being closed with the latch thereof locked.

The latches in the present disclosure are also of the type shown in Craig Patent No. 2,450,372, granted September 28, 1948.

Referring to the drawing by reference characters, the invention is shown as embodied in a coincidental door locking system wherein the latches are arranged upon a multi-door vehicle and wherein means extending between the latches causes them to be all locked or all unlocked coincidentally.

As shown each latch includes a base plate 10, which is suitably attached to the door D. The base plate has a flange 11 thereon, which is provided with a slot 12 through which a pivoted bolt 13 protrudes. The bolt 13 is shown as pivotally mounted on the base 10 as at 14 and at its outer end supports a roller 15.

The protruding roller 15 moves in an inclined slot 16 in a strike member 17, arranged upon the pillar 18. The slot 16 is inclined so that as each door closes its associated roller moves from one end of the slot 16 towards the other end to fully engaged position behind the portion 19 of the slot. To hold the bolt in this position and thereby hold the door closed, a catch member 20 is pivotally supported at 21 upon the base 10, and includes notched portions 22 and 23.

The bolt 13 includes an inwardly directed pin 24 which rests upon the notched portion 22 when the bolt is in the down or disengaged position, as shown in broken lines in Fig. 9. When the bolt is raised to safety latched position the pin engages the notch 23 and when the bolt is raised to fully engaged position (full lines in Fig. 9), the bolt engages the bevelled portion 25, just above the notch 23. When so engaged the bolt cannot move downwardly to disengaged position until the catch member 20 is swung and is released, as will be hereinafter described. A tongue 25' in the base limits the movement of the catch member in one direction.

One end of a spring 26, arranged about the pivot pin 14, engages a pin 27 on the catch 20 and urges the catch 20 to bolt holding position (full lines in Fig. 9), while the other end of the spring 26 engages a pin 28 on the bolt 13 to normally urge the bolt downwardly to disengaged position.

To release the bolt by means of an inside remote control, an inside door handle 29 is shown. This handle includes an arm 30, disposed inside the door and adapted to be rocked by the handle 29. The arm 30 is connected to one end of a rod 31, the other end of the rod 31 fitting in a hole 32 in a rock arm 33 which is pivoted on the pivot 21. The lower end of the rock arm engages an actuating pin 70 mounted on a latch releasing member 40 (both to be later described). The rock arm will thus move the pin 70 and the pin will move the catch 20. Thus when the handle is rocked to the left in Fig. 2, the rod 31 will be pulled to rock the catch member 20 to the broken line position in Fig. 9, thus permitting the spring 26 to move the latch bolt to disengaged position as the door is opened.

In order to provide means exterior of the vehicle for releasing the catch members 20 and also to provide means for locking the release means against unwarranted operation, locking member 34 is provided for each catch. Each locking member is pivoted on a pivot 35 on the base 10. One end of the locking member 34 is raised as at 34' and a snap-over spring 35' is arranged between this portion 34' and the base 10 to hold the locking member in either one of its two position. Tongues 35'' struck from the base 10 limit movement of the locking member 34.

The locking member 34 includes a protruding portion 36 which extends through a slot 37 in the flange 11. The portion 36 is formed into a cylindrical shape to support a roller 37'.

The locking member is similar in some respects, to the locking member shown in Fig. 32 of the applicant's prior Patent No. 2,204,208, mentioned above.

As shown, the locking member is provided with guide tongues 38 which slidably support a latch release member 40, which is movable to and from latch releasing position, as will be hereinafter described. The latch releasing member includes an extension portion 41, which is slidable in a hole 42 in the portion 36.

The latch releasing member is limited in its movement away from latch releasing portion by

a tongue 45 which is struck up from the locking member 34.

The locking member 34 includes an elongated slot 46, which is wider at one end than at the other end is aligned with a slot 47 in the base 10, and the latch releasing member 40 is also provided with a substantially trapezoidal shaped slot 48, aligned with the slots 46 and 47. These slots 46, 47, and 48 receive a releasing arm 49, which may be operated from the exterior of the door, as will be now described.

The releasing arm 49 is carried by an outside actuator, indicated generally at 50 (see Fig. 3). As shown the actuator includes a body 51, having a hand grip 52 thereon. A screw 52' holds the body 51 in place.

The body 51 includes a bore 53 in which a push member 54 is arranged. The push member 54 includes a flanged portion 55, which normally is urged against a shoulder 56 by a spring 57, which also engages a flange 58 on a rotary support 59. A guide washer 60 engages the end of the flange 58 and a split spring 61 holds the parts assembled.

The push member 54, as shown, is in the nature of a lock, the details of which form no part of the present invention. This lock is adapted to be rotated by a key 62 and when the key is inserted and turned the flanged portion 55 will be moved in one direction or the other, depending on whether the key is moved to locked or unlocked position. The key is returned to a normal intermediate position for removal.

The push member 54 includes holes 63, in which pins 64 on the support 59 are arranged to slide. The pins 64 cause the support 59 to rotate with the lock barrel push member 54 and also allow the lock barrel member to slide axially relative to the support 59. The support 59 includes depending ears 65, on which the arm 49, previously described is pivoted as at 66.

The arm 49 includes a bell crank portion 67 which is engaged by a depending pin 68 on the lower portion of the barrel push member 54 and the construction is such that the arm 49 rotates with the lock barrel push member 54 about the axis of the lock barrel push member when the latter is turned. This rotation is through a very small angle limited by the engagement of the free end of the arm 49 with the upper edge of the slot 48 when the locking member 40 is in unlocked position (see Fig. 2) and the lower edge of the slot 48 when the member 40 is in locked position. The arm 49 is also rocked by the push member when the latter moves axially. As stated, the arm 49 extends through the slots 46, 47 and 48, the slot 47 being of a size so that it is not engaged by the releasing arm 49. The slot 48 is of a length to comfortably receive the releasing arm 49 so that as the push member 54 is pushed inwardly, the arm 49 is rocked, thus by engagement of one edge of the arm 49 with one side of the slot 48 moving the latch releasing member 40 to the right in Fig. 9.

This will cause a pin 70 on the latch releasing member 40 to engage a tongue 71 on the catch member 20, causing the catch member to be rocked to the broken line position in Fig. 9, thus releasing the bolt 13 so that the latter may be moved downwardly by the spring 26, as the door opens.

This last described action occurs when the locking member is in the unlocked—that is the full line position shown in Fig. 9. When the locking member 34 is moved to the broken line position shown in Fig. 9, as by pushing downward on a push wire 72 which has a finger tip button 73 thereon, accessible from within the vehicle or by turning the key 62 and rocking the arm 49 as previously described so that the locking member assumes the position shown in Fig. 9, the locking member will be rocked about its pivot 35, and will be held by the spring 36, so that the pin 70 will be in the broken line position in Fig. 9. In this latter condition when the releasing arm 49 is rocked to shift the latch releasing member 40, the pin 70 will move into a notch 74 in the catch member 20. Full movement of the arm 49 will not cause the pin 70 to engage the end wall of the slot 74 to rock the catch member 20 to releasing position and thus there will be no releasing action by movement of the latch releasing member 40.

From the foregoing description it will be apparent that the latch may be released, by operating the push member 54 when the locking member 34 is in one position and that a similar operation of the pushing member 54 when the locking member 34 is in the other position will not serve to open the door. However, the inside release member 29 may be operated to release the catch member and to free the bolt regardless of which position (locked or unlocked) the locking member happens to be in.

In order to prevent a vehicle operator from locking himself out of the vehicle through inadvertently closing the door when the locking member 34 is in locked position, the catch member 20 is provided with a restoring pin 75 which is disposed adjacent to and is adapted to engage the lower edge 76 of the catch releasing member 40. The edge is curved upwardly slightly at 76' to keep the pin 75 always in engagement with the member 40 when said member is in a locked or unlocked position. The pin 75 is disposed at one side of the axis of the pivot 35 and the construction is such that when the catch member 20 is rocked by the spring 26 as the door is closed the pin 75 will shift with the catch member 20. Thus when the parts are in the position shown in broken lines in Fig. 9, (that is in the locked condition), and the member 20 is rocked as just described in the act of closing the door, the pin 75 will move upwardly slightly in Fig. 9 and will engage the edge 76 of the latch releasing member 40 and will rock the member 40 upwardly. The member 40 is carried on the locking member 34, and the arrangement of parts is such that the locking member 40 will be moved to unlocked position, where it will be held by the spring 35'. Thus the likelihood of any operator locking himself out of the vehicle due to thoughtless closing of the door when the latch is locked will be prevented.

Should the button 73 be depressed and the locking member 34 be in its locked position, actuation of the inside handle 29 will cause the lever 33 to be rocked and, by engagement with the pin 70, move the member 40 to its extreme rightward position in Fig. 9 to cause the pin 70 to engage the inward edge of the notch 74 to rock the catch member 20 and release the bolt 13. By engagement of the pin 75 with the edge 76, the member 34 will be moved over its center position, and the construction is such that when the inside handle is actuated the pin 70 will move along the edge 74' of the notch 74, permitting the locking member 34 to return to its unlocked position, thus leaving the open door in an unlocked condition. The lever 33 is suitably curved to permit the pin 70 to be moved with the locking assembly without disturbing the lever 33.

However, should the operator desire to lock the vehicle door without the use of a key he may operate the push button 73 on a door, moving the locking member 34 on that door to locked position (that is the broken line position in Fig. 9) whereupon the operator will press the push button 54 on the same door and in doing this will move the latch releasing member 40 to the right in Fig. 9. This movement will move the member 40 so that the pin 75 will be moved from the edge 76 and will be aligned with a slot in the latch releasing member 40. Thus when the door is closed and the catch member 20 moves, the pin 75 will pass into the slot 79 and will not engage the edge 76 and therefore the locking member 34 will remain locked.

Thus by dual manipulation—that is by pushing on the push member 54 and at the same time closing the door when the locking member 34 is in locking position the operator will cause the parts to remain locked. Further, as hereinafter explained, due to a coincidental locking system to be later described, this dual act will also cause all of the other doors besides the one door being closed to be locked regardless of whether the other doors were in locked or unlocked position when the one door was closed.

The latches described above may be used individually as single latches. They may also be used with a coincidental locking device and/or with a vehicle speed control for releasing the latches as will be later described.

For coincidental locking the rollers 37' on the lock members 34 of adjacent door latches are adapted to move into substantially U-shaped wings 80 mounted at the two ends of a locking bar 81 which has a lever 82 connected thereto. The bar 81 includes arms 83 which are pivoted as at 84 to uprights 85 struck from a base 86 of a speed control and lock assembly 86' shown in Fig. 3. The uprights 85 are supported by braces 85' bent up from the base 86. This assembly also includes a vertical portion 87 which supports the barrel 88 of a key operated lock as shown in elevation in Figs. 3 and 7, the operating details of which form no part of the present invention. The lock 88 includes a projecting cylindrical member 89 which has a crank 90 mounted thereon and the crank 90 includes a crank pin 91 which fits in the slot 92 in the locking bar 81.

The lock is adapted to be turned by a key 88' from a neutral position in either direction. This turning of the lock moves the crank 90 from an upper position to a lower position, and vice-versa, and in so doing the pin 91 moving in the slot 92 in the locking bar 81 raises and lowers the bar 81 and thus raises and lowers the wings 80.

The lever 82 on one side of the vehicle is connected by a Bowden wire 93 with a similar lever 82 on the other side of the vehicle, with the Bowden wire preferably passing beneath the vehicle body. The Bowden wires are so connected to the levers that when the lever on one side is depressed or raised the lever on the other side of the vehicle will be also depressed or raised.

The speed control and lock assembly may be inserted through the front of each pillar through a removable panel 18' therein and is advanced and suitably secured in a position wherein the wings 80 are disposed as shown in Fig. 3 to receive the rollers 37 when the door is closed. A snap-over spring 95 (Figs. 7 and 8) holds bar 81 and wings 80 in either up or down position after they have been moved to such positions. Stops 96 limit the movement of the bar 81.

When two adjacent doors are closed and the rollers 37' are in the wings 80 with the locking bar 81 in the position shown in Fig. 8, the locking members 34 will be in a position to cause the associated latches to be unlocked. When, under this condition, a key is inserted in the lock 88 and the lock 88 is moved to locked position, that is the lock is moved so that the pin 91 is lowered and the locking bar 81 is moved downwardly the wings 80 will move downwardly and thus will move the rollers 37' and will move the associated locking members 34 downwardly so that the latter will be in locked position.

The slot 92 is of a shape to permit the pin 91 to move up and down therein. The lock 88 is preferably of the well known character wherein the key 88' must be turned to a normal intermediate position before the key can be removed. When the pin is in this normal position and the wings 80 are in locked position (as in Fig. 8) the pin will be adjacent to the lower face of the slot 92 and when the wings 80 are in the reverse position the pin will be adjacent to the upper edge of the slot. This allows the wings 80 to be moved to locked and to unlocked position by the lever 82 independent of the position of the pin 91.

As the wings 80 move about the pivot 84 from locked to unlocked position, there is a slight forward and backward movement of the wings relative to the face 87. The wing supports however are slightly flexible and are rather loosely fitted together so that this slight movement of the wings 80 does not cause a binding action due to the rollers 37' pressing against the wings.

When any key 62 of a latch is turned from locked to unlocked position or vice-versa, the releasing arm 49 will be rotated about the axis of the push member 54 and will be swung upwardly or downwardly. The releasing arm it will be noted operates in a slot 60' in the washer 60. The key 62 must be in unlocked position with the member 49 in normal intermediate position when the key is removed and when in this position the releasing arm 49 will fit in the slot 48 as shown in Fig. 2 when the device is unlocked. The slot 48 is shaped to permit the releasing arm to fit therein in reverse position when the latch is locked.

By rotating the key 62 it will be seen that the releasing arm 49 will be rocked about its axis (which coincides with the axis of the push member 54) and will raise the locking member 34 upwardly or downwardly, depending upon the direction of movement of the releasing arm. This upward or downward movement of the releasing arm will cause similar movement of the members 34 and 40 and will likewise shift the rollers 37' upwardly or downwardly and thereby shift the wings 80 in a similar direction and manner.

Thus it will be apparent that all the latches on closed doors can be coincidentally locked either by operating the key 88' in the lock member 88 or by operating the key 62 in any one door handle or by pushing down any locking member 73 or by rocking the lever 82.

The vertical position 87 of each speed control and lock assembly 86' has a tongue 100 extending at right angles thereto and this tongue includes a downwardly bent end 101 which carried a pivot pin 102 which supports a downwardly depending, generally U-shaped spring 103. The

spring includes a pair of opposed vertical portions 104 from which opposed inclined tabs 103' extend. The spring includes downwardly converging portions 105 which terminate in short vertical tongues 106 which normally are slightly spaced apart by the resiliency of the spring material. A solenoid 107 on the base 86 has an armature 108 which has a rounded end 109 which when the solenoid is energized, moves between the tongues 106.

To energize the solenoid 107 one lead 110 therefrom is shown as passing to a contact 111 on an arcuate circuit closer 112. The other lead 113 extends through a source of current 114 to the needle 115 of a vehicle driven speedometer 116 and the construction is such that when the speedometer needle 115 is moved when the vehicle goes into motion this needle will close the circuit from the lead 110 to 113 and thus will energize the solenoid and cause the armature to move upwardly against the tension of a spring 117. When the vehicle speed decreases to a predetermined rate, the solenoid will be de-energized and the spring 117 will lower the pin 108.

The spring 103 is of such character that normally the vertical portion 104 may be moved inwardly easily when the solenoid is not energized.

The latch releasing member extensions 41 previously mentioned are in the nature of speed controlled feelers and each of these extensions has its free end adjacent to the vertical portion 104 of the spring. Thus when the latch releasing member starts its movement towards latch releasing position the associated extension 41 will engage the spring portion 104. When the solenoid is not energized the spring will bend easily and thus there will be no resistance to the operation of the latch releasing member. When, however, the solenoid is energized and the solenoid armature 108 is between the tongues 106 the spring can be flexed only under great force and at this time it will require great pressure to move the latch releasing member to latch releasing position.

Thus it will be seen that when the vehicle is at rest the latches may be released from within or from without the vehicle to open the doors with only a light finger tip pressure. However, when the vehicle is moving above a predetermined rate of speed the latch releasing members can only be operated with difficulty. Thus accidental door opening is prevented while at the same time the fear of riders who object to riding in a vehicle the doors of which are locked against opening is overcome.

To open the dors from without, pressure on the push member 54 will rock the releasing arm 49 and will cause the associated latch releasing member to be moved by the arm 49 to releasing position. If the locking mechanism is in locked condition movement of the arm 49 will merely cause the latch releasing member to move idly since in that position the pin 70 will move into the notch 74.

In closing the door when all of the latches are unlocked and the locking lever 82 is in unlocked position with the parts as shown in Fig. 2, the operator merely closes the door and the parts remain in the condtiion shown in Fig. 2. When in this condition from within the vehicle all doors may be locked by pushing on any one button 73 or by rocking the lever 82 to locked position. The upward movement of either of the levers 82 will rock the bar 80 and the wings 81. The wings 81, engaging the rollers 87, will rock the latter and will thus rock the locking members 34 to locked position. A reverse movement of either lever 82 will move the locking members 34 to unlocked position. From without the vehicle all doors may be locked by moving the key 62 or the key 88' to locked position. All doors may be unlocked when they are locked by reversal of the operations just described.

In operation and assuming that all doors are closed and that the vehicle is at rest, the operator may turn any remote control handle 29 thus causing the rod 31 to rock the catch member 20 and thus free the associated bolt. When the bolt is freed opening of the door causes the roller 15 to move along the groove 16 and then to pass from this groove.

If the vehicle is at rest when the above operation takes place the extension 41 on the latch release member will engage the associated vertical portion 104 of the spring and will push that portion without difficulty. When, however, the vehicle is running and the solenoid armature 109 is disposed between the tongues 106 the force required to move the portion 104 of the associated spring will be such that the operator 29 can be actuated only with great difficulty. Thus accidental opening of the door is prevented.

The above described operation of opening any door from within by operating the remote control handle 29 applies regardless of whether or not the latches are in locked or unlocked condition.

Assuming now that certain of the doors are closed and that the locking mechanism for the closed doors is in locked condition. Now if an operator closes another door the locking member 34 of which is in unlocked condition this will cause the roller 37' on the one door to move its wing 80 thus causing all of the wings to move to unlocked position. This is done by the roller 37' camming against the adjacent portion of the wing 80 thus shifting the wing 80. This occurs while the catch member 20 is being rocked by the pin 24 passing from notch 22 to notch 23 and to edge 24, so that the pin 75 holds the locking member 34 in the position shown in Fig. 2 and thus overcomes the tension of the springs 35' and 95 which tend to hold the doors previously locked in that condition.

Assuming now that certain of the doors are closed and that the locking mechanism for the closed doors is in unlocked condition and that the operator wishes to cause all of the doors to be locked. The operator will press down on the push button 73 on the door which is being closed, this will place the locking member 34 of the door being closed in locked condition. The operator will thereupon press the push member 54 inwardly and will at the same time close the door. In this position movement of the catch member 20 by its engagement with the pin 24 on the bolt will take place with the pin 75 on the catch member passing into the slot 79 and the pin 70 will be disposed in the notch 74. In this condition the roller 79' will enter its associated wing 80. The pin 70 will then engage the edge 74' of the notch 74 thus preventing the locking member 34 from shifting to unlocking position and the roller 37' will thus pass into its associated wing 80 and will pull this wing from unlocked condition to locked condition and will cause all of the other wings to move to locked condition.

When any door is closed with the push member 54 moved inwardly as in the operation described in the preceding paragraph the exten-

sion 41 will be advanced and as the door closes will strike the inclined tab 103' on the spring 103 and as it moves along the tab will push the portion 104 of the spring inwardly so that the parts assume the position shown in Fig. 3. The spring will offer no substantial resistance to this movement when the vehicle is at rest but should a door be closed while a vehicle is in motion so that the solenoid armature end is between the ends 105 of the spring an added force must be applied to the door in closing the same.

Assuming now that certain of the doors are closed and are unlocked and that the operator closes one door which unknown to him has been placed in locked position, then in this circumstance when the operator closes this one door without pressing on the push member 54 the one door will become unlocked and the others will remain unlocked.

It will be understood under certain installations the lock 88 on the pillars may be omitted and only the key operated locks 62 may be employed. Also under other conditions it may be desirable to omit the locks operated by the key 62 and make the members 54 merely push members and depend only on the locks 88 as the key operated members.

From the foregoing description it will be apparent that the present disclosure relates to a novel latch construction which, if desired, may include coincidental locking mechanism and/or safety release controls and wherein the parts act in effective manner to perform their intended functions.

Having thus described my invention, I claim:

1. A coincidental door locking system including a body having a plurality of doors hung thereon, a bolt on each door, each pivoted bolt being movable to engaged and released positions, a strike for each bolt, the strikes being mounted on the body, means to release each bolt, each release means including a pivoted locking member mounted to move about the axis of its pivot to locked and to unlocked position, a releasing member mounted directly upon the locking member to move on the locking member to releasing and non-releasing position, means to release each bolt when the associated releasing member is moved when the locking member is turned to one position, means to prevent release of each bolt when the associated releasing member is similarly moved while the locking member is turned to another position about its axis, and moving means to coincidentally move all of the locking members to the unlocked or locked position.

2. A coincidental door locking system including a body having a plurality of doors hung thereon, a bolt on each door, a pivotal mounting for each bolt, each bolt being movable about the axis of its pivot to engaged and released positions, a strike for each bolt, the strikes being mounted on the body, means to release each bolt, each release means including a locking member mounted on the door to move to locked and to unlocked position, and a releasing member movably mounted on the locking member and operable to cause all of the locking members to assume the locking or unlocking position taken by the locking means for any one bolt when the any one bolt is advanced to engaged position by the closing of its associated door.

3. A coincidental door locking system including a body having a plurality of doors hung thereon, a pivoted bolt on each door, each bolt being movable to engaged and released positions, a catch member for each bolt, the catch members being mounted on the body, means to release each bolt, each release means including a pivoted locking member and a second member mounted to move longitudinally on the first member, means on the second member to release the bolt when the second member is moved in one direction when the first member is turned to one position about its axis, and coincidental locking means to prevent release of the bolt when the second member is similarly moved while the first member is turned to another position about its axis, inside bolt release means operable to move the second member to bolt releasing position, a movably mounted, manually operable member movable independently of the inside bolt release means and operable to move all of the locking members from locked to unlocked positions and vice versa, and means operable to move all of the first members to the one position when any one bolt is advanced to engaged position while the first member associated with the any one bolt is in the other position.

4. In a coincidental locking system for multiple door vehicles, a latch and a companion strike for each door, each latch including a latch bolt, a pivotal mounting for each bolt, each bolt being movable about the axis of its pivot to and from strike engaging position, outside means for releasing each latch bolt, locking means mounted on each door for each latch adapted to be set to render the outside releasing means inoperative to release its companion latch bolt, a manually operated member on each door to set the door locking means thereon to locked position, and means when any door is in closed position and is unlocked and another door having its latch in locked position is thereafter closed to cause the door being closed to become unlocked and the other doors previously closed to remain unlocked.

5. A coincidental door locking system including a body having a plurality of doors hung thereon, a pivoted bolt on each door, each bolt being movable about the axis of its pivot to engaged and released positions, a strike for each bolt, the strikes being mounted on the body, inside and outside means to release each bolt, each release means including a locking member mounted on the door to move to locked and unlocked position and a sliding releasing member mounted to move bodily with the locking member to bolt releasing and non-releasing positions, means to release each bolt when the associated releasing member is moved when the locking member is in one position, means to prevent release of each bolt when the associated releasing member is similarly moved while the locking member is moved to another position, and a manually movable member which is movable independently of the inside release means and which may be moved to a position to cause all of the locking members to assume the unlocking position when the any one bolt is advanced to engaged position.

6. A coincidental door locking system including a body having a plurality of doors hung thereon, a pivoted bolt on each door, each bolt being movable about the axis of its pivot to engaged and released positions, a strike for each bolt, the strikes being mounted on the body, inside and outside means to release each bolt, each release means including a locking member and a releasing member mounted on the door to move

to bolt releasing and non-releasing position, means to release each bolt when the associated releasing member is moved when the locking member is in one position, means to prevent release of each bolt when the associated releasing member is similarly moved while the locking member is moved to another position, and a manually movable member which is movable independently of the inside release means and which may be moved to a position to cause all of the locking members to assume the locking position when the any one bolt is advanced to engaged position while its associated locking means is in locked position.

7. A coincidental door locking system including a body having a plurality of doors hung thereon, a pivoted bolt on each door, each bolt being movable about the axis of its pivot to engaged and released positions, a strike for each bolt, the strikes being mounted on the body, means to release each bolt, each release means including a locking member mounted on the door to move to locked and to unlocked position, and a releasing member mounted on the locking member and arranged to move bodily with the locking member to bolt releasing and non-releasing position, means to release each bolt when the associated releasing member is moved when the locking member is in one position, means to prevent release of each bolt when the associated releasing member is similarly moved while the locking member is moved to another position, and a manually movable member which may be moved to a position to cause all of the locking members to assume the locking or unlocking position taken by the locking means for any one bolt when the any one bolt is advanced to engaged position.

8. A coincidental door locking system including a body having a plurality of doors hung thereon, a base on each door, a bolt on each base, each bolt being pivotally mounted on the base and being movable to engaged and released positions, a strike for each bolt, the strikes being mounted on the body, means including an inside and an outside member to release each bolt, each release means including a pivoted locking member mounted to move about the axis of its pivot to locked and to unlocked position, a releasing member mounted independent of the base and adapted to move on the locking member to bolt releasing and non-releasing position, means to release each bolt when either the inside or the outside associated releasing member is moved when the locking member is turned to one position about its axis, means to prevent release of each bolt when the outside associated releasing member is similarly moved while the locking member is turned to another position about its axis, moving means to move all of the locking members to the unlocked position when any bolt is advanced to engaged position while any locking member is in the locked position, a manually movable member which is movable independently of the inside release member and which may be moved to a position to prevent the moving means from moving all of the locking members to the unlocked position when any one bolt is advanced to engaged position while the any one locking member is in locked position and means to cause all of the other locking members to be moved to locking position when one of the locking members is locked and the bolt is advanced to engaged position while the manually movable member is actuated.

9. In a latch, a base, a pivoted bolt, a pivoted catch member, means operative at all times to urge the bolt to disengaged position, coacting means on the bolt and catch member to hold the bolt in engaged position, a pivoted locking member movable to locking and unlocking position, a latch releasing member slidably mounted on the locking member, actuating means on said latch releasing member operable to rock said catch member to free the bolt when the locking member is in unlocked position, said actuating means being ineffective to free the bolt when the locking member is in locked condition, inside release means for releasing the bolt regardless of whether the lock member is locked or unlocked, a manually operable member movable independently of said inside release means for moving said locking member from locked to unlocked position and vice versa, an outside operator including a pivoted releasing arm connected to said latch releasing member and operable to release the latch releasing member, means carried by said outside operator for moving said locking member from locked to unlocked position and vice-versa, said locking member including a free end, and engaging means on the vehicle body for engaging said free end, said engaging means and said free end being shiftable together to move the locking member to and from locking position.

10. In a latch, a base, a pivoted bolt, a pivoted catch member, means operative at all times to urge the bolt to disengaged position, coacting means on the bolt and catch member to hold the bolt in engaged position, a pivoted locking member movable to locking and unlocking position, a latch releasing member slidably mounted on the locking member, actuating means on said latch releasing member operable to rock said catch member to free the bolt when the locking member is in unlocked position, said actuating means being ineffective to free the bolt when the locking member is in locked condition, restoring means operable when the bolt is moved from disengaged to engaged position while the locking member is in locked position to unlock the locking member and manual means operable to cause said restoring means to be ineffective to unlock the locking member when the bolt is moved from disengaged to engaged position while the locking member is in locked position, inside release means for releasing the bolt regardless of whether the lock member is locked or unlocked, a manually operable member movable independently of said inside release means for moving said locking member from locked to unlocked position and vice versa, an outside operator including a pivoted releasing arm connected to said latch releasing member and operable to release the latch releasing member, means carried by said outside operator for moving said locking member from locked to unlocked position and vice-versa, said locking member including a free end, and engaging means on the vehicle body for engaging said free end, said engaging means and said free end being shiftable together to move the locking member and lock means on the vehicle body for shifting said engaging means so that the locking member is moved to and from locking position.

11. In a latch assembly, a base, a bolt, means to pivotally mount the bolt upon the base, a one piece catch member pivoted upon the base, means operative at all times to urge the bolt to disengaged position, means normally urging the catch

member to engaged position, means fixed on the bolt and directly engaging the catch member to hold the bolt in engaged position, a locking member pivotally mounted on said base, a latch releasing member slidably mounted independent of the base for longitudinal movement on the locking member, actuating means carried directly on said latch releasing member and disposed to directly engage and rock said catch member to bolt releasing position when the locking member is in unlocked position and the latch releasing member is shifted, said actuating means being disposed to be ineffective to rock said catch member to bolt releasing position when the locking member is in locked condition.

BURNIE J. CRAIG.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,059,952	Spooner	Apr. 22, 1913
2,001,787	Lakin	May 21, 1935
2,014,363	Whitted	Sept. 10, 1935
2,039,873	Anderson et al.	May 5, 1936
2,221,181	Dall	Nov. 12, 1940
2,234,810	Simpson	Mar. 11, 1941
2,246,781	Dall	June 24, 1941
2,249,018	Marple et al.	July 15, 1941
2,329,309	Ward et al.	Sept. 14, 1943
2,450,372	Craig	Sept. 28, 1948
2,529,421	Redenbaugh	Nov. 7, 1950