

May 5, 1936.

A. C. ANDERSEN ET AL

2,039,873

COACH LATCH

Filed Oct. 21, 1932

4 Sheets-Sheet 1

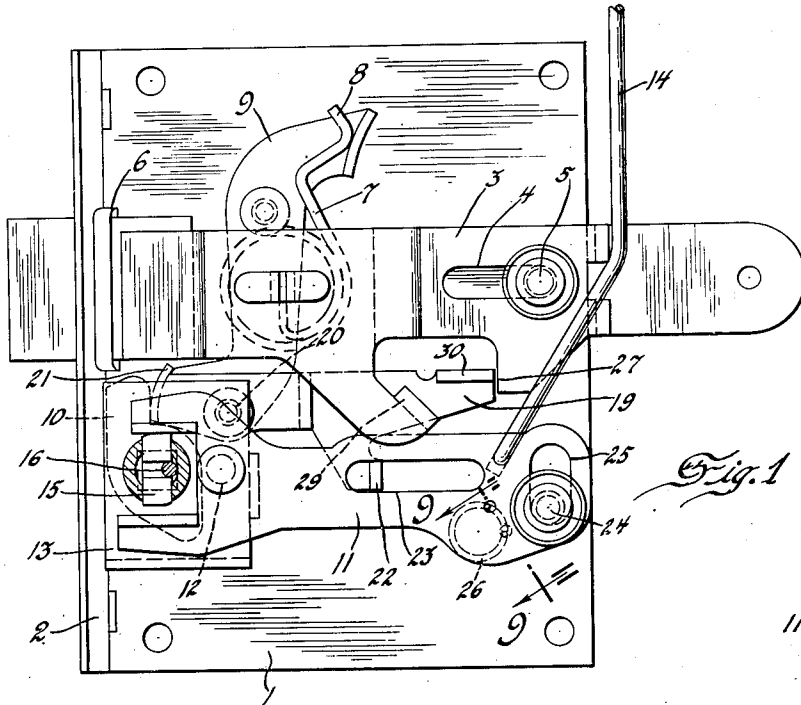


Fig. 1

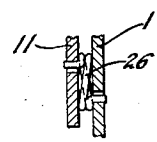


Fig. 9

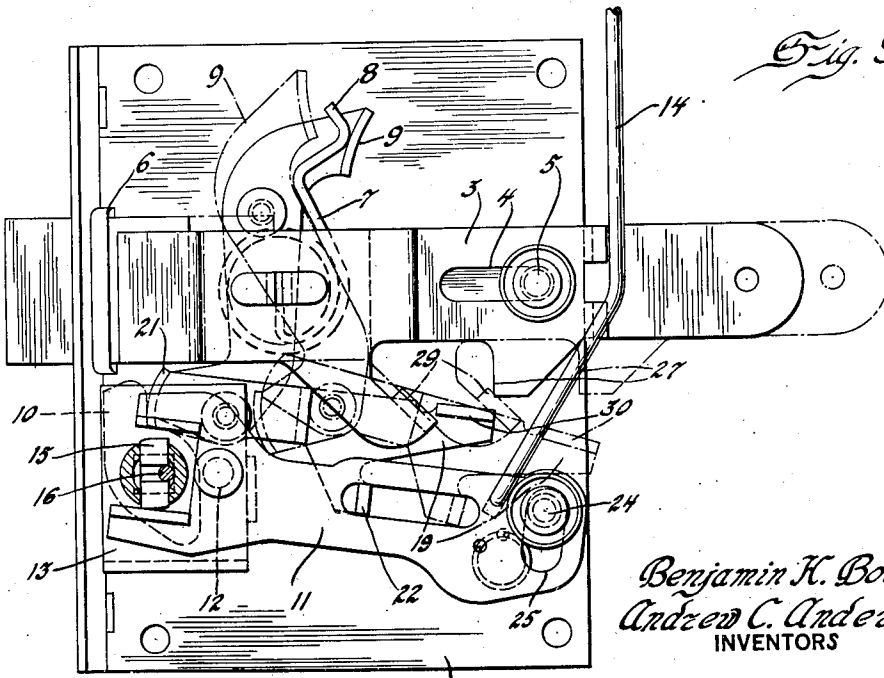


Fig. 2

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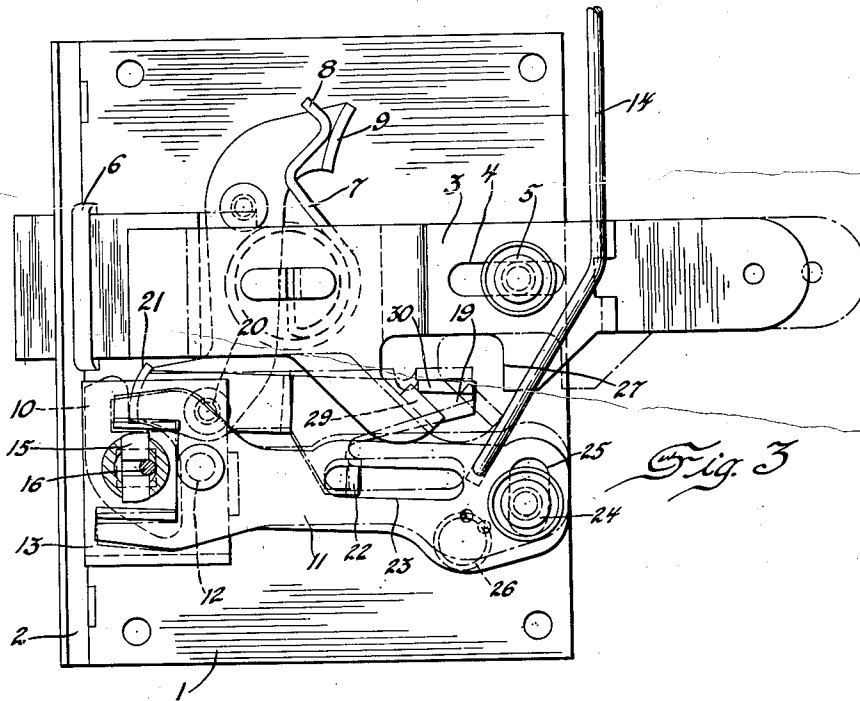


Fig. 3

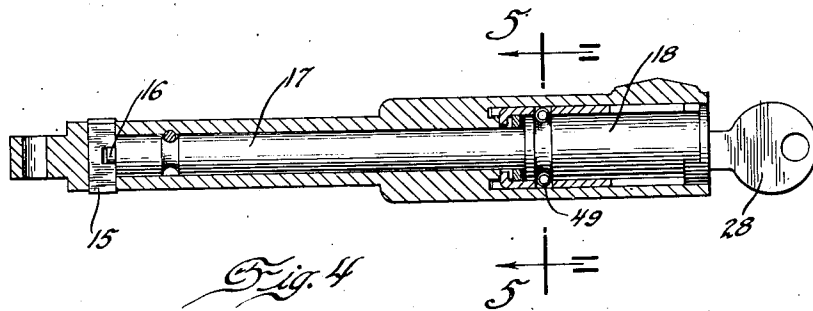


Fig. 4

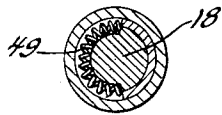


Fig. 5

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4 Sheets-Sheet 3

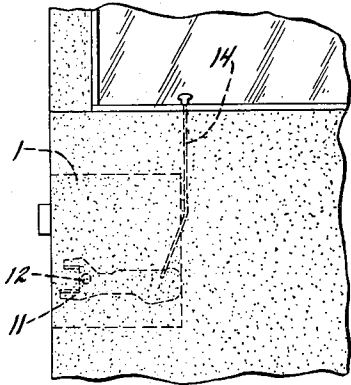


Fig. 8

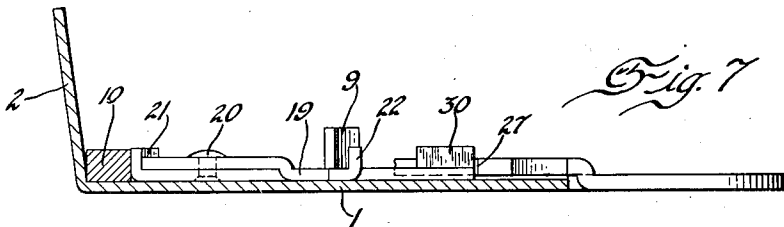


Fig. 7

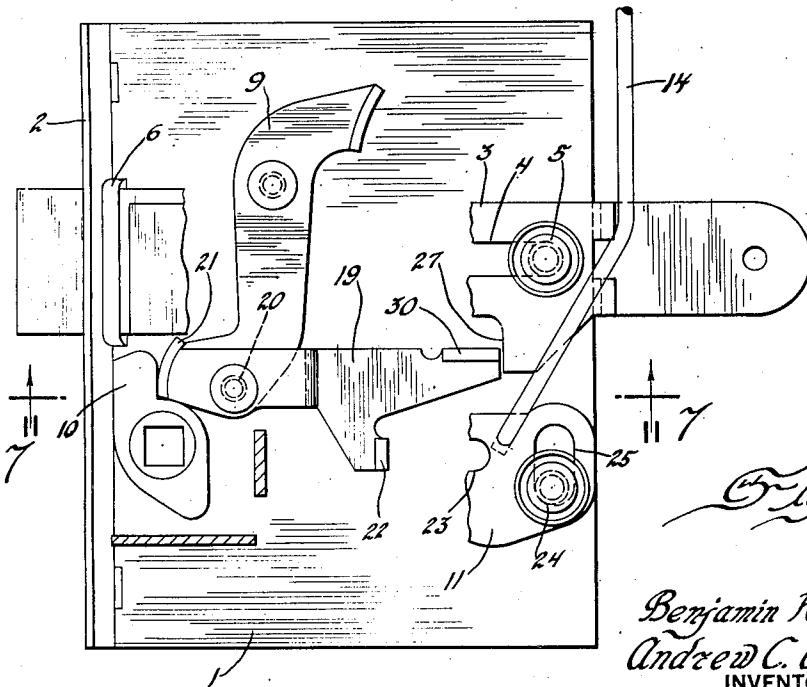


Fig. 6

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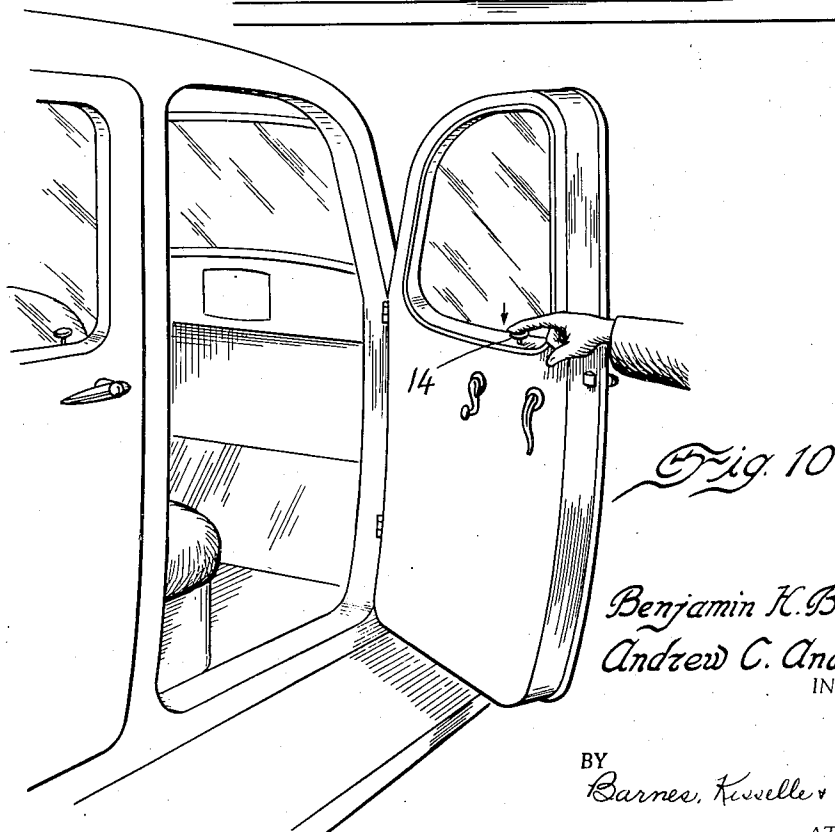
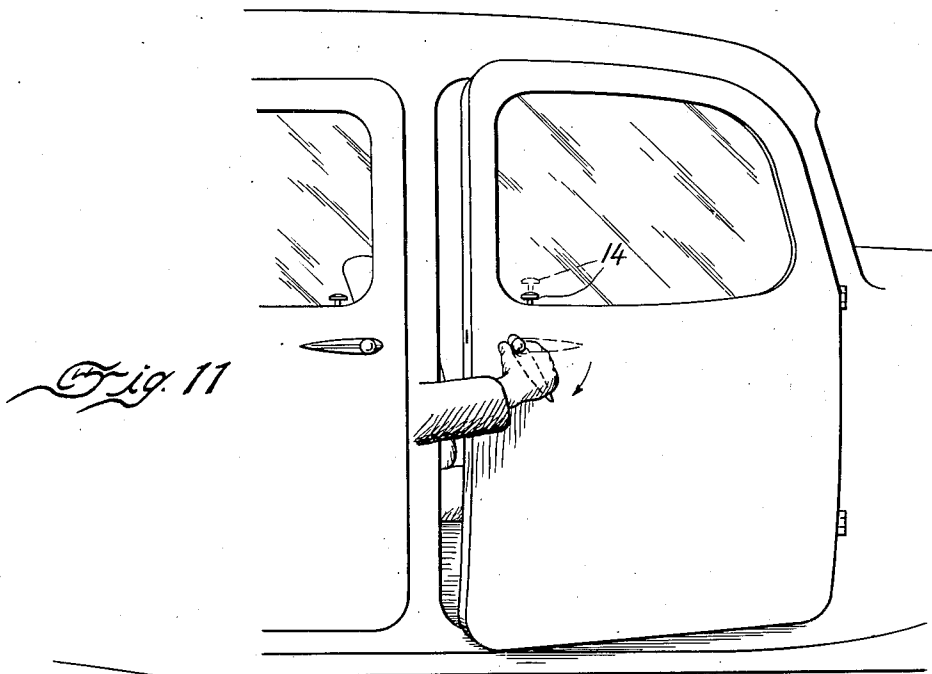
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,039,873

COACH LATCH

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Application October 21, 1932, Serial No. 633,856

29 Claims. (Cl. 70—91)

It is desirable in present day latches to have one which can be dogged or made ineffective by manipulation on the inside of the car but in which the dog or clutch device is released upon closing the door. This arrangement is designed to permit dogging on the inside of the door to prevent access of holdup men. However, this introduces a risk that somebody will set the dog on the inside of the door and then close the door and lock himself out with the keys possibly in the car. To overcome this difficulty, it has been customary to arrange for the locking bolt to retract the dog or other devices that renders the outside handle ineffective whereupon the operator of the car is required to lock the front curb door with a key.

We have this arrangement but have contributed what we believe to be a new and novel factor in that by pushing down the button and turning the outside door handle down which is an unnatural and therefore premeditated motion, and closing the door, the operation of the door bolt upon the locking apparatus is made ineffective so that the device remains locked and it is not necessary to use the key to lock the lock.

One or more of the latches, comprising the set for the vehicle body, must have a key lock on the outside of the body. A spindle lock is provided whereby the disconnecting device can be actuated to operative or inoperative position from the outside. A special form of spindle lock is provided so that the locking pawl after being operated by a key will immediately return to neutral position when the key is released. This prevents the pawl from blocking the push rod so that the push rod cannot be used. It also has the advantage of automatically returning the key to the position in which it can be drawn out of the lock. These and other features will be more fully described hereinafter.

In the drawings:

Fig. 1 is an elevational view of the lock with the parts in the position in which the outside handle is coupled with the bolt.

Fig. 2 is a similar view in which the parts are shown in the position wherein the outside handle is disconnected from the bolt, and showing in the dotted lines how the disconnecting devices can be temporarily placed so that the closing of the door will not reset these devices.

Fig. 3 is a similar view showing how closing the door automatically releases the locking apparatus.

Fig. 4 is a longitudinal section through the spindle lock and the outside door handle,

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a fragmentary detailed elevation of the latch.

Fig. 7 is a section on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary elevation of the latch 5 assembled in the vehicle door showing the indicator push rod projecting through, and operative from, the garnish molding.

Fig. 9 is a section on the line 9—9 of Fig. 1.

Fig. 10 is a perspective showing how one leaving the vehicle must first press down on the inside control or push button while the door is open.

Fig. 11 shows how the same person then locks the door by twisting the handle downward and closing it.

The front plate is designated 1, the selvage plate 2, the sliding bolt 3 slotted at 4 to be guided by the pin and washer 5 in connection with the struck out portion 6 of the selvage plate. The usual spiral spring 7 is anchored on the sliding bolt and its free end 8 engages a lever 9 which in turn butts against the outside rollback 10. This is an old characteristic of the "Ternstedt" type of lock.

A swinging control lever 11 is pivoted at 12 to the small cover plate 13 that engages over the outside rollback 10. This lever is operable from the garnish molding by the push and pull rod 14 and it is also operable by the pawl 15 of the spindle lock which is operated by an eccentric pin 16 on the end of the spindle lock shaft 17 that is connected up with the usual pin tumbler lock barrel 18. This lock can only be turned in each direction through a range of about one-fourth of a turn. Then the helical spring 49, (Fig. 5) returns the key and also the pawl to the neutral position so that the key can be withdrawn. The pawl 15 being in neutral position, will not block the swinging of the lever by means of the push and pull rod 14 as it might otherwise. For instance, if one were to swing the lever 11 and the bolt-operating lever 19 from the position shown in Fig. 2, to that shown in Fig. 1 by the operation of the pawl 15 and if the pawl were to be left in such position of projection, this pawl would block the operation of the lever by means of the push rod 14.

This lever 19 is the connection between the rollback and the bolt. It is pivoted at 20 to the lever 9 which communicates the thrust of the bolt spring to the rollback to keep this against the back of the selvage plate to prevent rattling. This lever also becomes part of the connection between the outside rollback and the bolt for it

has the turned up edge 21 against which the roll-back cams. This lever 19 has a turned out lug 22 which engages in the slot 23 of the lever 11. The pin and washer 24 engaging in the slot 25 serves as a guide in the movement of the lever 11. The helical spring 26 is a snap-over center spring that insures the complete movement of the lever and the push rod to one position or the other and tends to keep it there.

The operation of the lever is as follows: In Fig. 1 the outside handle (not shown) is connected to operate the bolt as the bolt operating lever 19 is in its raised position. In Fig. 2 the bolt operating lever 19 has been withdrawn from the abutment 27 of the bolt so operation of the roll-back 10 will simply cause an idling movement of the lever. This withdrawal has been effected by pushing down the push rod 14. If it is desired to return the bolt operating lever to an operative position this may be done by pulling up on the rod 14 or it may be done by the pawl 15 with the key 28 (Fig. 4) of the pin tumbler lock. The pawl 15 will be immediately returned by the spring 49 to its neutral position when the turning effort is released on the key. If it did not return to neutral position as already explained, it would block the pushing down of the lever by means of the rod 14.

Now another thing that will return the bolt operating lever to its operative position is the cam lug 29 depending from the bolt. This engages the corresponding cam lug 30 on the bolt operating lever and serves to raise it, when the bolt is retracted either by movement of the inside handle or by closing the door. One of the important features of this lock is that when the operating connection between the outside roll-back and the bolt is in the ineffective position (as shown in Fig. 2), it is possible to render the automatic resetting of the connecting lever 19 ineffective. This is done by pressing the button on the push and pull rod while the door is open and operating the roll-back to turn back the lever 9 and push back the operating lever 19, to dotted line position shown in Fig. 2.

It will be apparent that with the lever in this position, that the cam lug 30 is out of the range of the companion cam lug 29 so that the closing of the door will not automatically reset the disconnecting device between the outer roll-back and bolt. Hence, it will be apparent that while closing the door will ordinarily automatically reset the disconnecting device so that one will not be locked out of his car in case the push button has been placed in the disconnecting position, nevertheless, if he designedly wishes the disconnecting device to remain in the disconnecting position, he simply presses the push button and turns down the outside handle when he closes the door. This temporarily removes the setting device from the influence of the releasing cam of the bolt and hence the lock remains on, that is, the operating lever 19 is disconnected from the abutment 27 (Fig. 2) and thus the operation of the roll-back 10 by the outside door handle is ineffective to retract the bolt 3.

It is usually customary to provide only one of the set of locks for the vehicle with a key actuated lock on the outside of the body. Hence, in case the key actuated mechanism is not desired the same may be omitted. In such a case the latch, above described, may be used but the locking pawl 15 and associated key actuated mechanism 17, 18, 28 and 49 may be omitted. In such a case the roll-back 10 can be connected or disconnected from the bolt 3 through the lever 19 by operation of the

push and pull rod 14 or by the retraction of the bolt 3 through the cooperating cam lugs 29 and 30.

One of the features of the improved lock is an arrangement whereby the spiral spring 7 which keeps the bolt projected also serves to return the handle to its original position after it has been turned without retracting the bolt. The roll-back 10, together with the outside handle, can be turned through something less than a quarter of a turn—until the lower portion of the roll-back butts up against the selvage plate 2. When this is done after the actuating lever 19 has been taken out of engagement with the bolt, the end 8 of the spring 7 tends to resist this turning movement. The spiral spring winds up by the lever 9 bending it over forwardly. However, when the bolt is retracted by the outside retractor, not only does the spring tend to wind up by bending forward the end 8, but the whole spring is carried rearwardly with the movement of the bolt. Consequently, the winding up is substantially twice as fast and, furthermore, like all springs, the further the spring is distorted, the greater becomes the resistance per unit of movement. In other words, this spring affords a much lighter resistance to the turning of the handle in the locking operation than in the bolt withdrawing operation. This we believe is new.

In order to make more certain the elements referred to in the claims, it may be stated that the "actuating connection" is the lever 19 connecting between outside "roll-back" 10 and sliding latch bolt 3. The "inside control" is the vertical push rod 14 and the lever 11 which connects with the actuating lever 19 by means of the lug 22 engaging in the slot 23. This lever 11 may be used with or without the outside key 28 (Fig. 4). The key can operate the pawl 15 which is always thrown back to neutral position by the spring 49. In some of the claims of broader aspect, the actuating connection 19 is designated "locking means" as it will be apparent that the general system of control is applicable to a type of lock where the locking action constitutes blocking the roll-back or is applicable, as in the present case, to what we call the semi-freewheeling handle.

The "outside control", in the specific embodiment of this application, is the outside door handle shown in Fig. 4, the outside door handle spindle and the roll-back 10. In many of the claims, the outside control, the outside door handle and the outside controlled roll-back are recited as separate elements. This is done because it chances that the outside door handle, its spindle and the roll-back attached to the spindle have two completely separate functions: one to retract in the normal way and the other to retract the connecting member 19 (as shown in the dotted lines of Fig. 2) from the range of operation of the "releasing member" 29 on the sliding bolt. Obviously, in the invention's broader aspect, these two functions could be assigned to entirely independent members. The "cam" recited in some of the claims is the "roll-back" 10 which has the double function of either operating to retract the bolt or when the lever 19 is thrown out of connection with the bolt operating to remove the lever 19 from the range of the action of the releasing member 29.

The above explanation or "lexicon" is given in order to aid the reader in following the terminology of the claims and applying the claims to the specific structure disclosed in the drawings. It is, however, not meant in any restrictive sense

such as limiting the claims to the specific elements that happen to be illustrated and described in the specification as one example of the invention.

5 What we claim is:

1. In a coach latch, a casing, a bolt slidable therein, an outside retractor, a disconnectable connection between the outside retractor and the bolt, a lever for controlling said connection, means connecting with one end of the lever for controlling the movement of the same and an outside operated key lock having a pawl engaging the opposite end of the lever for controlling it, and yielding means for returning the pawl so as to prevent the same blocking operation by the other control means.

2. In a coach latch, a casing, an outside roll-back, a sliding bolt operated by the said outside roll-back, a disconnectable connection between the sliding bolt and the outside retractor, means for controlling said disconnectable connection either from the inside of the car or from the outside, in the latter case by a key, said means including devices in the way of cam connections between the bolt and the disconnectable connection for returning the disconnectable connection to operative position when the door is closed.

3. In a coach latch, a casing, an outside retractor, a sliding bolt operated by said outside retractor, a disconnectable connection between the sliding bolt and the outside retractor, means for controlling said disconnectable connection either from the inside of the car or from the outside, in the latter case by a key, said means including devices in the way of cam connections between the bolt and the disconnectable connection for returning the disconnectable connection to operative position when the door is closed, and also including parts enabling the disconnectable connection to be rendered ineffective to return to its operative position when the door is closed, said parts operated by turning of the outside retractor when the door is closing.

4. In a door latch, the combination of a casing, a retractable bolt mounted on the said casing, an outside retractor for the said bolt movable from a predetermined position when the bolt is projected to another position to retract the bolt, means for rendering the outside retractor ineffective controlled from the inside of the door, a second means operated by the closing of the door for actuating said first means to connect the outside retractor and the bolt, and operative connections between the said outside retractor and said first means whereby when the outside retractor is moved from the predetermined position it occupies when the bolt is projected the said first means is moved beyond the range of said second means and the outside retractor remains ineffective to retract the bolt when the door is closed.

5. In a door latch, the combination of a casing, a retractable bolt mounted on the said casing, an outside retractor for the said bolt actuable from a predetermined position to retract the said bolt, a pivoted connector between the outside retractor and the bolt, a movable supporting pivot for the said pivotal connector, means controllable from the inside of the door for pivoting the said pivotal connector to inoperative position to disconnect the bolt and the outside retractor, a second means actuable by the retraction of the bolt to pivot the pivoted connector into operative position to connect the

outside retractor and bolt when the outside retractor is in said predetermined position whereby when the pivoted connector is pivoted to inoperative position the outside retractor may be moved from the said predetermined position to prevent said second means from returning the pivoted connector to operative position when the bolt is retracted.

6. In a door latch, the combination of a casing, a retractable bolt mounted on the said casing, an outside retractor for the said bolt actuable from a predetermined position to retract the said bolt, a pivoted connector between the outside retractor and the bolt, a movable supporting pivot for the said pivotal connector, means controllable from the inside of the door for pivoting the said pivotal connector to inoperative position to disconnect the bolt and the outside retractor, a second means actuable through a predetermined range by the retraction of the bolt to pivot the pivotal connector into operative position to connect the outside retractor and the bolt when the outside retractor is in said predetermined position whereby when the pivoted connector is pivoted to inoperative position the outside retractor may be moved from the said predetermined position to move the inoperative pivotal connector without the range of said second means to prevent said second means from returning the pivoted connector to operative position when the bolt is retracted.

7. In a door latch, the combination of a casing, a retractable bolt mounted on the said casing, an outside retractor for the said bolt actuable from a predetermined position to retract the said bolt, a pivoted connector between the outside retractor and the bolt, a lever pivoted to the latch casing and pivotally supporting the said pivotal connector, means controllable from the inside of the door for pivoting the said pivotal connector to inoperative position to disconnect the bolt and the outside retractor, a second means actuable through a predetermined range by the retraction of the bolt to pivot the pivotal connector into operative position to connect the outside retractor and the bolt when the outside retractor is in said predetermined position whereby when the pivoted connector is pivoted to inoperative position the outside retractor may be moved from the said predetermined position to move the inoperative pivotal connector without the range of said second means to prevent said second means from returning the pivoted connector to operative position when the bolt is retracted.

8. In a door latch, the combination of a casing, a retractable bolt mounted on the said casing, an outside retractor for the said bolt actuable from a predetermined position when the bolt is projected to retract the said bolt, a pivotal connector having a contact engagement with the bolt and a contact engagement with the outside retractor, a lever pivoted to the latch casing and pivotally supporting the said connector between its ends, means controllable from the inside of the door for pivoting the said pivotal connector out of contact with said bolt, a second means actuable through a predetermined range by the retraction of the bolt to pivot the pivotal connector to return the pivotal connection in contacting engagement with the bolt when the outside retractor is in said predetermined position whereby when the pivoted connector is disengaged from the bolt the outside retractor may be moved from said predetermined position to

5 pivot the aforementioned lever and throw the pivotal connector without the range of said second means to prevent said second means from reengaging the pivoted connector with the bolt as the bolt is retracted.

9. In a door latch, a casing, a retractable bolt mounted therein, an outside retractor for said bolt, a disconnectable connection between the outside retractor and the bolt, a lever operatively connected with the said disconnectable connection, means on the inside of the door connected with one end of the lever for controlling the movement of the said lever, an outside operated key lock having a pawl engaging the opposite end of the lever for controlling the said lever, the said pawl being movable from a neutral position to actuate the said lever, and yieldable means for returning the pawl to its neutral position to prevent the pawl from blocking the operation of the lever by the inside control means.

10. In a coach lock, the combination of a casing, a spring propelled bolt movable in the casing, an outside controlled roll-back normally for retracting the bolt, an outside handle for operating same, an outside control permanently connected with the casing, an inside control, and devices operated by said controls for rendering the outside handle ineffective to retract the bolt, said devices operating to render said handle ineffective only when both of the controls have been operated after the door has been opened.

11. In a coach lock, the combination of a casing, a spring propelled bolt movable in the casing, an outside controlled roll-back normally for retracting the bolt, an outside door handle, outside and inside controls, and devices operable by said controls for rendering the outside handle ineffective to retract the bolt, said devices being operative to render the outside door handle ineffective only when both of the controls have been moved to effective positions and in the case of the outside control, the action consisting in turning the outside door handle from its normal position and maintaining it in such turned position during the closing of the door.

12. In a coach lock provided with an outside operating handle and a bolt retracted by the closing of the door, the combination of locking means for rendering the outside handle ineffective to open the door, the closing of the door normally releasing said locking means, and mechanism which can be operated from the outside of the door only by operating the controls both on the inside and outside of the door to render said closing of the door ineffective to release said locking means.

13. In a coach lock, the combination of a casing, a spring propelled bolt movable in the casing, an outside controlled roll-back, an outside handle for operating said roll-back, means in the operating connections between the outside handle and the bolt for rendering said outside handle ineffective to retract the bolt, an inside control for setting said connections to render the outside handle ineffective to retract the bolt, releasing means connected with the bolt during its retracting movement for releasing the inside control to make the outside handle effective to retract the bolt and mechanism, operable only when the inside control is set, for making the releasing means ineffective to release the inside control.

14. In a coach lock, the combination of a casing, a spring propelled bolt movable in the casing, an outside controlled roll-back, an outside handle for operating said roll-back, locking means be-

tween the outside handle and the bolt for rendering said outside handle ineffective to retract the bolt, an inside control for setting said locking means to render the outside handle ineffective to retract the bolt, releasing means connected with the bolt and operating during its inward movement for releasing the inside control to make the outside handle effective to retract the bolt, and optionally controlled mechanism which can be made operable only when the inside control on the inside is set and only as the door is closing for rendering the said releasing means ineffective to release the inside control, said mechanism being capable of manipulation from the outside of the door by actuating a part permanently attached to the door and incapable of rendering the outside handle ineffective to retract the bolt if manipulated after the door is closed.

15. In a coach lock, the combination of a casing, a spring propelled bolt movable in the casing, an outside controlled roll-back, an outside door handle for operating said roll-back, means in the operating connections between the outside handle and the bolt for rendering said outside handle ineffective to retract the bolt, an inside control for setting said connections to render the outside handle ineffective to retract the bolt, releasing means connected with the bolt and operating during its inward movement for releasing the inside control to make the outside handle effective to retract the bolt, and mechanism which can be made operable only when the inside control is set and only as the door is closing for rendering the said releasing means ineffective to release the inside control, said mechanism being manipulated from the outside of the door by turning the outside door handle down from its normal position after the control on the inside of the door has, while the door is open, been set to render the outside handle ineffective, the said mechanism being capable of rendering said outside handle ineffective only if operated while the door is closing.

16. In a coach lock, the combination of a casing, a latch bolt movable therein and temporarily retracted as the door is closed, an outside controlled roll-back normally for retracting the bolt, an outside door handle connected with said roll-back, a movable actuating connection between the outside door handle and the latch bolt, an inside control for moving said actuating connection out of operating connection with said latch bolt, a releasing member actuated by the closing of the door for reestablishing the operative position of said actuating connection, an outside control, a cam which can be operated by the outside control only while the door is closing to prevent the releasing member from effectively functioning but only after the inside control member, while the door is open, has been set to disconnect the actuating connection.

17. In a coach lock, the combination of a casing, a latch bolt movable therein and temporarily retracted as the door is closed, an outside controlled roll-back normally for retracting the bolt, an outside door handle connected with the said roll-back, a movable actuating connection between the outside door handle and the latch bolt, an inside control for moving said actuating connection out of operating connection with said latch bolt, a releasing member actuated by the retraction of the latch bolt for reestablishing the operative position of said actuating connection, an outside control handle, a cam which can be

operated by the outside control handle to prevent the releasing member from effectively functioning but only after the inside control member has been set while the door is open to disconnect the actuating connection.

18. In a coach lock, the combination of a casing, a latch bolt movable therein and temporarily retractable as the door is closed, an outside controlled roll-back, an outside door handle connecting with the said roll-back, a movable actuating connection between the outside handle and the latch bolt, an inside control for moving said actuating connection out of operating relation with said latch bolt, a releasing member actuated by the closing of the door for reestablishing the operative position of said actuating connection, said outside door handle, spindle and roll-back being partially rotatable so that when held in the rotated position in closing of the door they prevent the releasing member from effectively functioning after the inside control member has been set to disconnect the actuating connection.

19. In a coach lock, the combination of a casing, a latch bolt movable therein and temporarily retractable as the door is closed, an outside controlled roll-back, an outside door handle connecting with the said roll-back, a movable actuating connection between the outside handle and the latch bolt, an inside control for moving said actuating connection out of operating relation with said latch bolt, a releasing member actuated by the retraction of the latch bolt for reestablishing the operative position of said actuating connection, said outside door handle, spindle and roll-back being rotatable to prevent the releasing member from effectively functioning after the inside control member, while the door is open, has been set to disconnect the actuating connection.

20. In a coach lock, the combination of a casing, a latch bolt movable therein and temporarily retractable as the door is closed, an outside controlled roll-back normally for retracting the bolt, an outside door handle connecting with the said roll-back, a movable actuating connection between the outside door handle and the latch bolt, an inside control for moving said actuating connection out of operating connection with said latch bolt, a releasing member actuated by the closing of the door for reestablishing the operative position of said actuating connection, an outside control handle, a cam which can be operated by the outside control handle of the door while the door is closing to withdraw the actuating member from the path of the releasing member only after the inside control member has been set to discontinue the actuating connection.

21. In a coach lock, the combination of a casing, a latch bolt movable therein and temporarily retractable as the door is closed, an outside controlled roll-back, an outside door handle connecting with the said roll-back, a movable actuating connection between the outside handle and the latch bolt, an inside control for moving said actuating connection out of operating connection with said latch bolt, a releasing member actuated by the closing of the door for reestablishing the operative position of said actuating connection, said outside handle being operable from the outside of the door while the door is closing to withdraw the actuating member from the path of the releasing member but only after the inside control member has been set while the door is open.

22. In a coach lock, the combination of a cas-

ing, a latch bolt movable therein and temporarily retractable as the door is closed, an outside controlled roll-back normally for retracting the bolt, an outside door handle operatively connected with said roll-back, locking means for making the outside door handle ineffective to retract the bolt, an inside control for setting said locking means to make the outside handle ineffective to retract the bolt, a releasing member actuated by the closing of the door for withdrawing the said locking means from its effective position, an outside control permanently attached to the lock casing, a cam which can be operated by the outside control while the door is closing to prevent the releasing member from effectively functioning but only after the inside control has been set to locking position while the door is open.

23. In a coach lock, the combination of a casing, a latch bolt movable therein and temporarily retractable as the door is closed, an outside controlled roll-back normally for retracting the bolt, an outside door handle operatively connected with said outside roll-back, locking means for making the outside door handle ineffective to retract the bolt, an inside control for setting said locking means to make the outside handle ineffective to retract the bolt, a releasing member actuated by the closing of the door for withdrawing the said locking means from its effective position, an outside control permanently carried by the casing, a cam which can be operated by the outside control to prevent the releasing member from effectively functioning but only after the inside control has been set to locking position while the door is open.

24. In a coach lock, the combination of a casing, a spring propelled bolt movable in the casing, an outside controlled roll-back, an outside door handle connected therewith, an inside control, means which can be set by said inside control for rendering the outside handle ineffective to retract the bolt, means for, as the door is closed, releasing the inside control and making the connections effective to retract the bolt and a second control effective only when it and the inside control have been moved to their set positions and then effective for preventing the releasing devices operating to release the inside control.

25. In a coach lock, the combination of a casing, a spring propelled bolt movable in the casing, an outside controlled roll-back, an outside door handle connected therewith, an inside control, means which can be set by said inside control for rendering the outside handle ineffective to retract the bolt, means for, as the door is closed, releasing the inside control and making the connections effective to retract the bolt and a second control effective only when it and the inside control have been moved to their set positions and then effective for preventing the releasing devices operating to release the inside control, said connections being operable to render the outside door handle ineffective only when both of the controls have been moved to effected positions when the door is open.

26. In a coach door lock, the combination of a reciprocable bolt, an outside door handle and devices operatively connecting the handle with the bolt for retracting the same, a spring for projecting the bolt, an inside control for setting the devices to render the outside door handle ineffective to retract the latch bolt, means actuated by the movement of the bolt to return the devices to operative position between the out-

side handle and the bolt whereby the outside handle becomes effective to retract the bolt, and a second control operatively connected with the said devices which may be operated effectively
5 only after the first control has been operated to set said devices whereby the means actuated by the movement of the bolt is ineffective to return the devices to operative position between the outside handle and the bolt.

10 27. In a latch, the combination of a casing, a movable bolt, a handle arranged to retract the bolt and also optionally to turn without retracting the bolt for the purpose of doing other work and a single spring for resisting either movement
15 of the handle.

20 28. In a latch, the combination of a casing, a movable bolt, a handle arranged to retract the bolt and also optionally to turn without retracting the bolt for the purpose of doing other work and a single spring for resisting either movement

of the handle but arranged to afford materially less resistance when the handle is turned to do the other work.

29. In a latch, the combination of a casing, a movable bolt, a handle arranged to retract the bolt and also optionally to turn without retracting the bolt for the purpose of doing other work, and a single spring for resisting either movement, comprising a spiral spring secured to the bolt and moving therewith and arranged so that
10 when the handle is turned without retracting the bolt, the outer end of the spring resists the turning, while when the handle is turned to retract the bolt, the outer end of the spring is distorted and at the same time the spring is moved
15 bodily increasing the rate of distortion and the amount.

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