

Jan. 24, 1939.

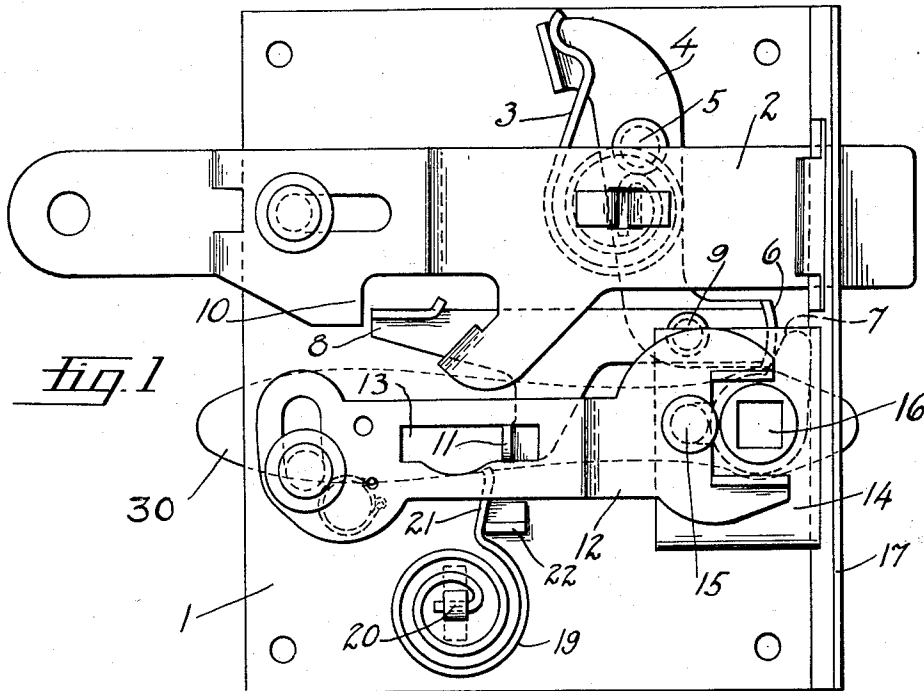
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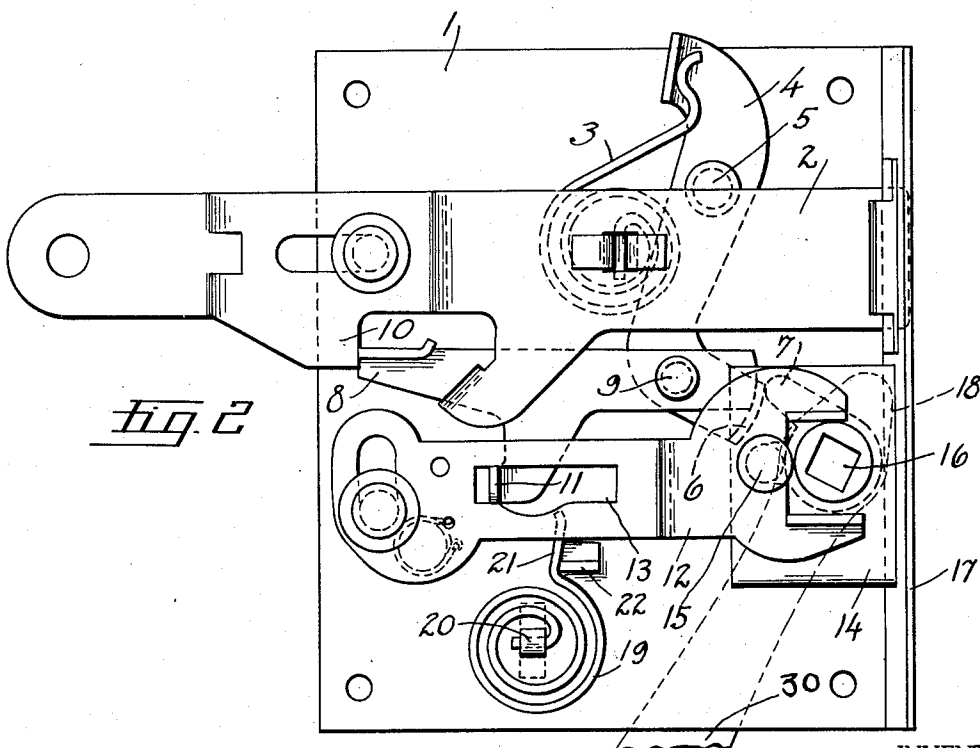
LOCK

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2 Sheets-Sheet 1



*Fig. 1*



*Fig. 2*

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2 Sheets—Sheet 2

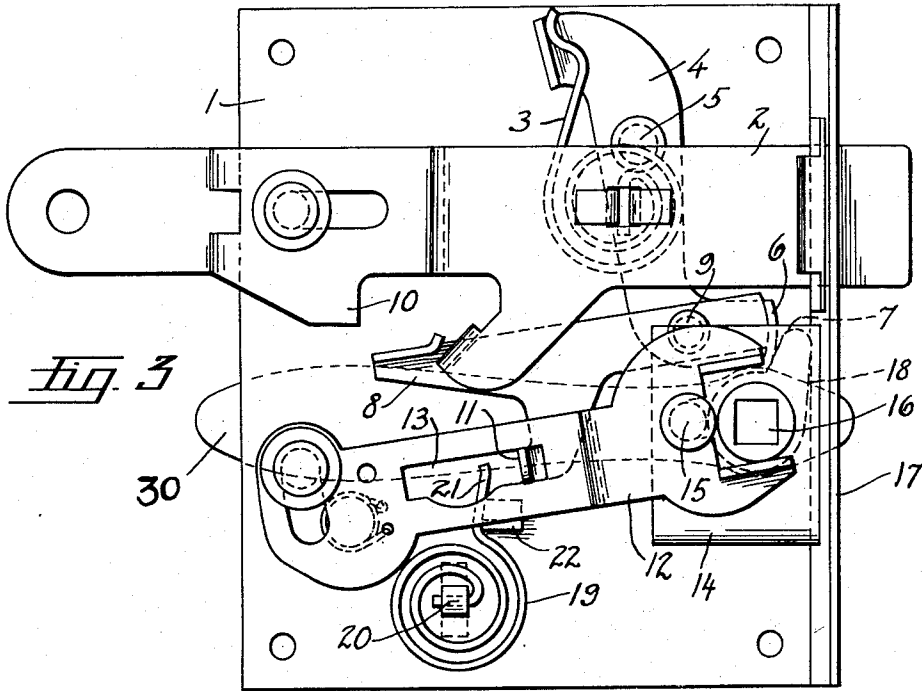


Fig. 3

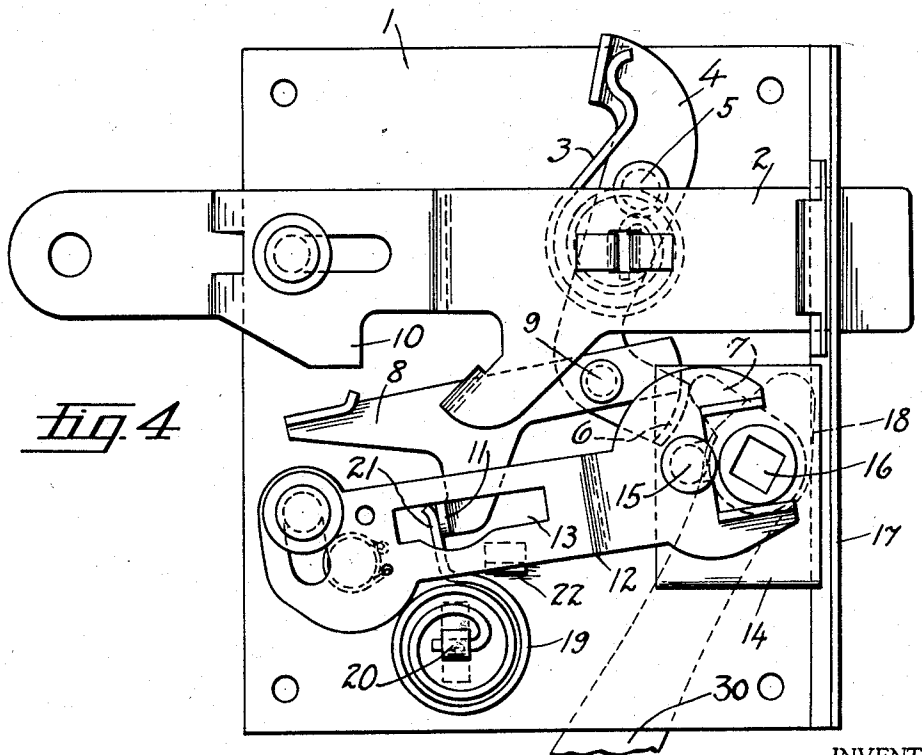


Fig. 4

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# UNITED STATES PATENT OFFICE

2,144,672

## LOCK

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Application February 10, 1937, Serial No. 125,022

8 Claims. (Cl. 292—165)

This invention relates to a lock and more particularly to an automobile lock of the class shown in the Andersen-Bowlus Patent No. 2,039,873. The lock shown in the Andersen-Bowlus patent is of the semi-freely rotatably outside door handle type, that is, the outside door handle is locked by disconnecting the outside rollback from the latch bolt whereupon swinging of the outside door handle is ineffective to retract the bolt. When the lock is in locked position, the outside door handle is held in horizontal position solely by the bolt spring. Although the Andersen-Bowlus lock has had, and is enjoying, great commercial success and was a great advance in the automobile lock art, some difficulty has been experienced, particularly with the advent of the much heavier die-cast outside door handles, in that when in locked or semi-freewheeling position the door handle, upon being swung downwardly to retract the bolt, does not always upon being released return to the normal horizontal position. This difficulty could be remedied by increasing the strength of the bolt spring or by providing the outside rollback with an auxiliary spring for returning the handle, when in locked or semi-freewheeling condition, back to its normal horizontal position. This solution of the problem is disadvantageous in that when the lock is unlocked and the outside rollback connected to the bolt, then in retracting the bolt the outside door handle must overcome the resistance in the first case of a much stronger bolt spring or in the second case the combined resistance of the bolt spring and the auxiliary spring acting against the outside rollback.

It is the object of this invention to overcome the above-mentioned disadvantage in this type of lock and assure the return of the outside door handle to horizontal or normal position without in anywise increasing the spring resistance that must be overcome when the lock is unlocked and the outside door handle is turned to retract the bolt. This object is achieved by means of an auxiliary spring which, when the lock is locked and the outside door handle and rollback in semi-freewheeling condition, acts to assist the return of the outside handle to normal position and which is inoperative and disconnected from the outside rollback and door handle whenever the lock is unlocked and the outside door handle connected to the bolt.

In the drawings:

Fig. 1 is a view of a lock, such as shown in the Andersen-Bowlus patent, with the auxiliary

spring and the position of the several parts when the lock is unlocked and the bolt projected.

Fig. 2 is similar to Fig. 1 except that the bolt and the several parts of the lock are shown in retracted position.

Fig. 3 is similar to Fig. 1 except that the lock is locked and the outside door handle disconnected from the bolt.

Fig. 4 is similar to Fig. 3 but in addition shows the condition of the parts when the bolt is projected, the lock is unlocked and the outside rollback and door handle has been turned from its normal horizontal position to bolt-retracting position.

Referring more particularly to the drawings there is shown a lock identical with that shown in the Andersen-Bowlus Patent 2,039,873. This lock comprises a latch frame 1 carrying a reciprocating bolt 2. The bolt 2 carries a convolute spring 3, the outer end of which acts against a lever 4 pivoted as at 5 on the latch frame 1. The other end 6 of the lever 4 abuts, and acts against, the outside rollback 7. A connector 8 is pivoted as at 9 to the lever 4. The bolt is provided with an abutment 10 against which the lever 8 abuts in the retraction of the bolt. The lever 8 is also provided with a depending finger terminating in an outwardly turned lug 11 which slidably engages a lever 12 in the slot 13. The lever 12 is pivoted to the rollback cover plate 14 as at 15.

The rollback is provided with a square opening 16 which is adapted to receive the square shank of any of the well-known and conventional outside door handles such as shown in Fig. 11 of the Andersen-Bowlus patent.

As shown in Fig. 3, the connector 8 has been swung about its pivot 9 and disconnected from the latch bolt abutment 10. When the lever 12 is swung upwardly or downwardly about its pivot 15, the lug 11 sliding in slot 13 causes the connector 8 to correspondingly swing upwardly or downwardly about its pivot 9. The lever 12 can be swung upwardly or downwardly about its pivot 15 in any well-known manner, from within the car by means of the interior push rod release shown in the Andersen-Bowlus Patent 2,039,873 or by a snap over center lever such as shown in the Simpson Patent 2,072,317, from without the car by the key controlled mechanism shown in these patents. This places the outside door handle in locked or semi-freewheeling position so that turning of the outside door handle is ineffective to retract the bolt. At this time the outside door handle, which is rigidly connected to the outside rollback 7, is held in normal posi-

tion, which, for descriptive purposes is shown as horizontal, by the force of the bolt spring 3 acting through lever 4, the lower end 6 of which holds the rollback finger against the selvage plate 17 of the latch plate as at 18.

If, while the lock is in the locked position, shown in Fig. 3, the outside door handle be turned downwardly and the rollback thereby rotated counterclockwise, the connector 8 is shifted thereby to the left, as shown in Fig. 4, and the rollback swings the lever 4 clockwise about its pivot 5. This turning of the lever 4 increases the tension of, or stress on, the spring 3. In this position of the lock, Fig. 4, the bolt spring 3, acting again through the lever 4 and rollback 7 tends, when the outside door handle 30 (indicated in dotted lines) is released, to return the outside door handle to normal horizontal position and the rollback to its normal position against the selvage plate, as shown in Fig. 3. However, the strength of the presently used spring has been insufficient in some cases to overcome the friction of the several pivoted and shiftable parts, such as 8 and 12, and the weight of the outside door handle and consequently the door handle has remained in drooped position and not returned to its normal position which, for descriptive purposes, may be taken as horizontal. To assist the return of the outside door handle to its normal position without increasing the resistance that must be overcome in the swinging of the door handle to retract the latch bolt, an auxiliary booster spring 19, of any desirable type, such as convolute spring 19, is affixed to the latch frame 1 in any desirable manner such as by the fastener 20. The outer end 21 of the spring is positioned between the latch frame 1 and the lever 12 and normally rests against an abutment 22 in the form of a lug struck out of the latch frame 1.

As shown in Fig. 3, when the bolt 2 is projected and the lock is locked, that is, connector 8 pivoted down and disconnected from abutment 10, the end 21 of the booster spring 19 is preferably, but not necessarily, spaced slightly from the lug 11. However, if the outside handle and the rollback now be turned in bolt retracting direction, the connector 8 will clear the abutment 10 and, of course, not retract the bolt. However, as the connector 8 shifts or travels to the left from the position shown in Fig. 3 to that shown in Fig. 4, the lug 11 strikes the end 21 of the spring 19 and stresses the same. Now upon release of the outside handle the force of the spring 21 acting through lug 11, connector 8 and lever 4 and assisted by the force of the bolt spring 3, swings the outside rollback 7 clockwise against the selvage plate 17 and returns the outside handle to horizontal, or what may be termed "normal", position. It will be noted that the end of the spring 21 acts as a booster spring and serves to assist the main spring 3 to return the rollback and handle to normal position during a substantial portion of their travel and then is arrested by the lug 22 and operatively disconnected from the lug 11.

As shown in Figs. 1 and 2, when the lock is unlocked and the connector 8 operatively connected with the abutment 10, then if the bolt 2 is retracted, as shown in Fig. 2, the lug 11 travels above and clears the end 21 of the spring 19. As the bolt is retracted it will be noted that the bolt spring 3 is placed under considerably more stress than in the case where the handle and rollback are swung to bolt retracting position and the connector 8 is disconnected from the bolt abutment 10, as shown in Fig. 4. Therefore,

when the lock is in the condition shown in Fig. 2, the force of the spring 3 is, at this time, sufficiently great to throw the rollback and outside door handle to their normal positions. At this time the assistance of the auxiliary spring 19 is not needed and would only increase the necessary torque which would have to be applied to the door handle to retract the latch bolt. Therefore, when the lock is unlocked, as shown in Fig. 2, during the retraction and projection of the latch bolt 2, the lug 11 clears and does not interact with the end 21 of the auxiliary spring 19.

I claim:

1. In combination with a door lock comprising a retractable bolt and shiftable bolt retracting means optionally connectable with, and disconnectable from, said bolt, said bolt retracting means being movable from an initial position whereby, when the said bolt retracting means is connected to the bolt, the bolt is retracted during such movement and when the said bolt retracting means is disconnected from the bolt the bolt retracting means is ineffective to retract the bolt, and means operatively connected to said bolt retracting means only when the bolt retracting means is disconnected from the said bolt and serving to retain the connector in its initial position.

2. In combination with a door lock comprising a retractable bolt and a connector optionally connectable with, and disconnectable from, said bolt, said connector being movable from an initial position when connected to, as well as when disconnected from, said bolt whereby, when the retractor is connected to the bolt, the bolt is retracted by the connector during such movement and when the connector is disconnected from the bolt the connector is ineffective to retract the bolt, and resilient means operatively connected to said connector only when the connector is disconnected from the said bolt and serving to return the connector to its initial position when the said connector is moved from said initial position and only while disconnected from said bolt.

3. In combination with a door lock comprising a retractable bolt, a rollback, a connector between the said rollback and bolt for transmitting the torque of the rollback to the bolt to retract the same when the rollback is turned from a predetermined normal position, the said connector being disconnectable from the said bolt whereby turning of the rollback from said initial predetermined normal position is ineffective to retract the bolt, and power means operatively connected to the said connector only when the said connector is disconnected from the said retractable bolt whereby when the rollback is turned the said power means acts against the said connector and tends to return the rollback to its initial normal position.

4. In combination with a door lock comprising a retractable bolt, a rollback and door handle, a connector between the rollback and the bolt whereby turning of the said handle and rollback from an initial normal position retracts the bolt, the said connector being disconnectable from the said bolt whereby turning of the rollback and door handle is ineffective to retract the bolt, and resilient means operatively connected with the said connector only when the said connector is disconnected from the bolt whereby the said resilient means tends to retain the said bolt and handle in their normal initial position.

5. In combination with a door lock comprising a retractable bolt, a rollback and door handle, a connector between the rollback and door handle 75

for transmitting the rollback torque to the bolt to retract the same when the handle is turned from an initial normal position, the said connector being disconnectable from said bolt to render turning of the handle ineffective to retract the bolt, and a spring operatively connected to the said connector only when the connector is disconnected from the bolt whereby turning of the door handle from its initial normal position causes the said connector to stress the said spring and the said spring upon release of the said handle urges the same toward its initial normal position.

6. In combination with a door lock comprising a retractable bolt, a spring for projecting the said bolt, a rollback and door handle, a connector between the rollback and door handle for transmitting the rollback torque to the bolt to retract the same when the handle is turned from an initial normal position, the said connector being disconnectable from said bolt to render the handle ineffective to retract the bolt, and a second spring operatively connected to the said connector only when the connector is disconnected from the bolt, the said connector being shifted into operative relation with the said second spring when disconnected from said bolt whereby turning of the door handle from its initial normal position causes the said connector to stress the said spring and the said connector being shifted out of operative relation with said second spring when connected to said bolt whereby the said connector is ineffective to stress the said second spring.

7. In combination with a door lock comprising a latch frame and a retractable bolt, a spring for projecting the said bolt, a rollback and door handle, a connector between the rollback and door handle for transmitting the rollback torque to the bolt to retract the same when the handle

is turned from an initial normal position, the said connector being disconnectable from said bolt to render turning of the handle ineffective to retract the bolt, a second spring operatively connected to the said connector only when the connector is disconnected from the bolt whereby turning of the door handle from its initial normal position causes the said connector to stress the said spring and whereby when the connector is connected to the said bolt the said connector is disconnected from the said second spring and ineffective to stress the same, and a stop against which the spring abuts when the handle is in initial normal position whereby the spring is spaced from, and held out of contact with, the said connector.

8. In combination with a door lock comprising a latch frame and a retractable bolt, a spring for projecting the said bolt, a rollback and door handle, a connector between the rollback and door handle for transmitting the rollback torque to the bolt to retract the same when the handle is turned from an initial normal position, the said connector being disconnectable from said bolt to render turning of the handle ineffective to retract the bolt, a convolute spring carried by the latch frame, the free end of which engages the connector only when the connector is disconnected from the bolt whereby turning of the door handle from its initial normal position causes the said connector to stress the said spring and whereby when the connector is connected to the said bolt the said connector is disconnected from the said convolute spring and ineffective to stress the same, and a stop against which the free end of the spring abuts when the handle is in initial normal position whereby the spring is spaced from, and held out of contact with, the said connector.

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