United States Patent [19]

Klebba

[11] **3,843,175**

[45] **Oct. 22, 1974**

[54] **SPRING ACTUATED LOCK FOR USE WITH MOTOR VEHICLE DOOR**

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[73] Assignee: **Volkswagenwerk Akt.**, Wolfsburg, Germany

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[21] Appl. No.: **325,041**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 270,288, July 10, 1972, abandoned, Continuation of Ser. No. 125,963, March 19, 1971, abandoned.

[30] **Foreign Application Priority Data**

Mar. 21, 1970 Germany 2013690

[52] **U.S. Cl.** **292/216**

[51] **Int. Cl.** **E05c 3/26**

[58] **Field of Search** ..... 292/153, 198, 216, 336, 292/336.3, 341.15, DIG. 46

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Attorney, Agent, or Firm—Watson, Cole, Grindle & Watson

[57] **ABSTRACT**

A spring actuated lock for use with a motor vehicle door assembly. The lock includes a trap lever disposed in the edge of the vehicle door in a position for cooperation with a bolt mounted in the door frame. When the bolt and the trap lever are moved relatively, for example by closing the door, the trap lever is rotated to release a spring loaded mechanism whereby the latter shifts into a locking position for holding the trap lever in a door locking disposition relative to the bolt. Movement of the operator mechanism of the door resets the spring loaded locking mechanism and opening of the door operates to swivel the trap lever about the bolt whereby to lock the mechanism in its reset or cocked position until once again the trap lever and the bolt are moved into interengagement.

8 Claims, 9 Drawing Figures

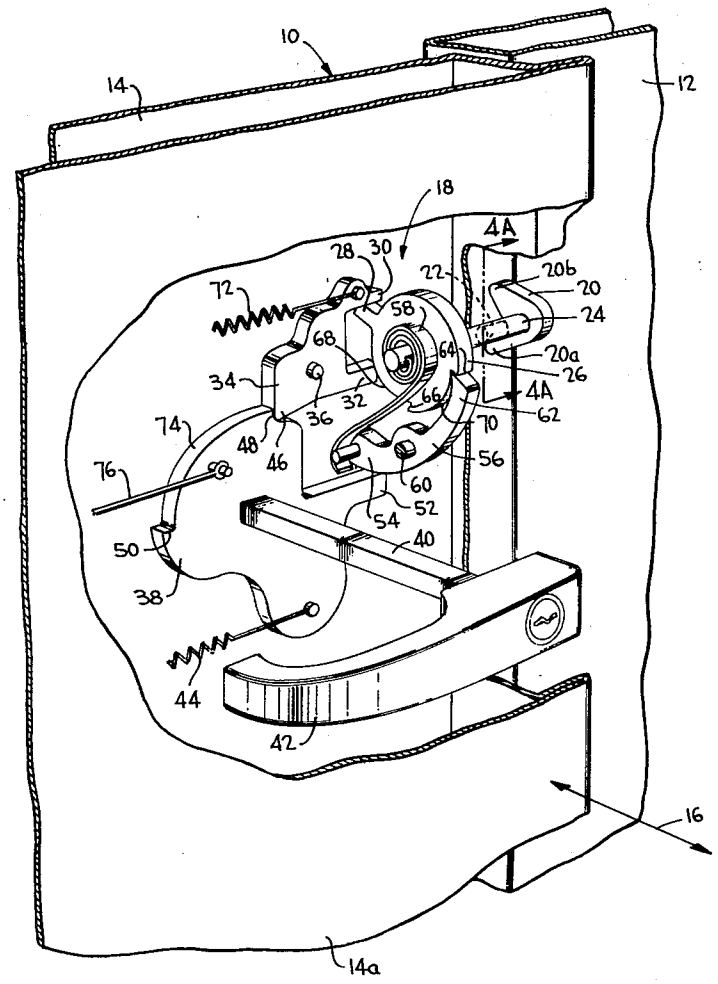


FIG. 1

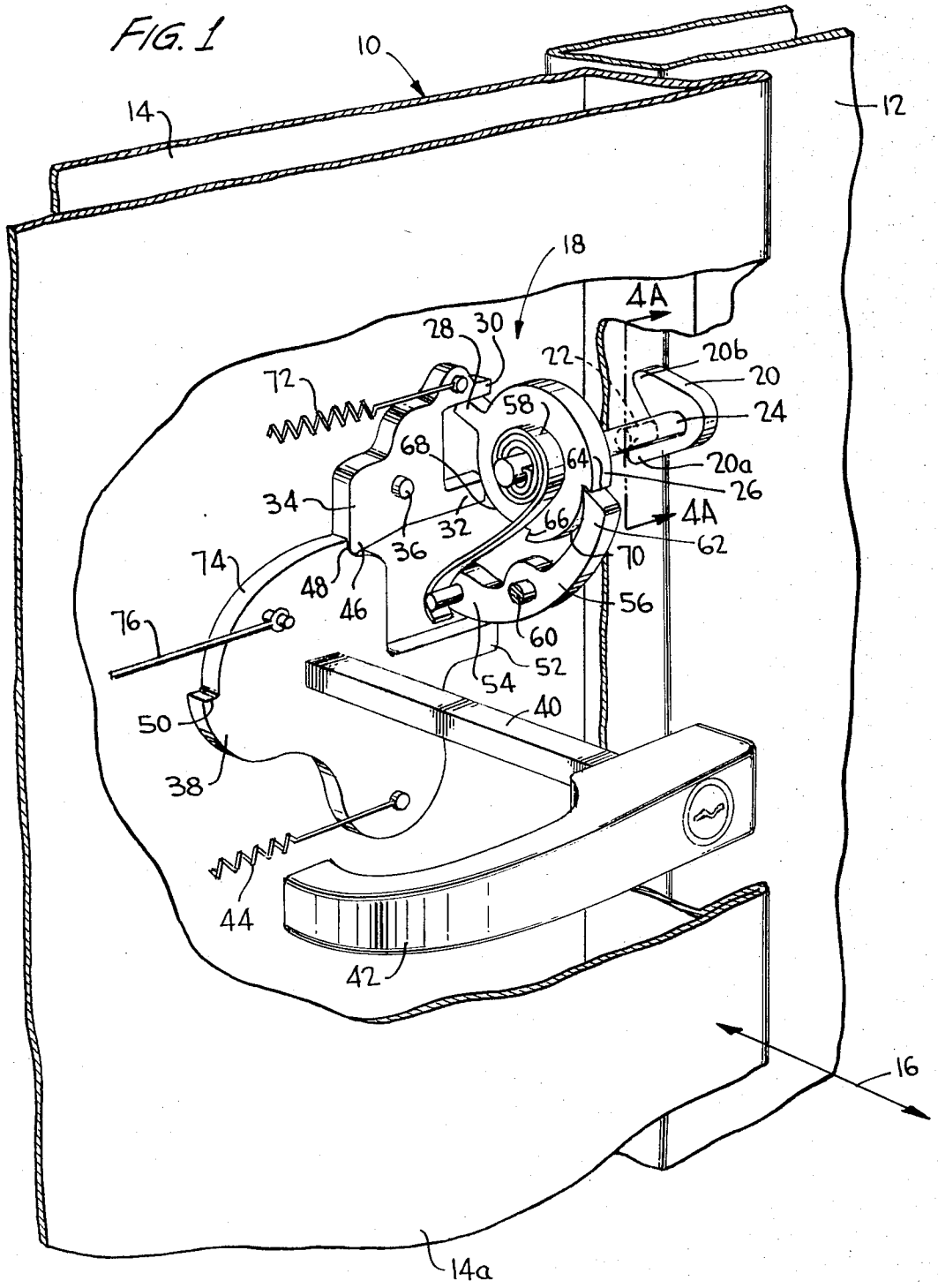

10
12
14
18
4A
28
30
22
20b
20
24
72
58
68
64
20a
26
34
32
66
4A
36
62
74
48
46
70
56
76
60
52
54
40
50
38
44
42
16
14a

FIG. 2

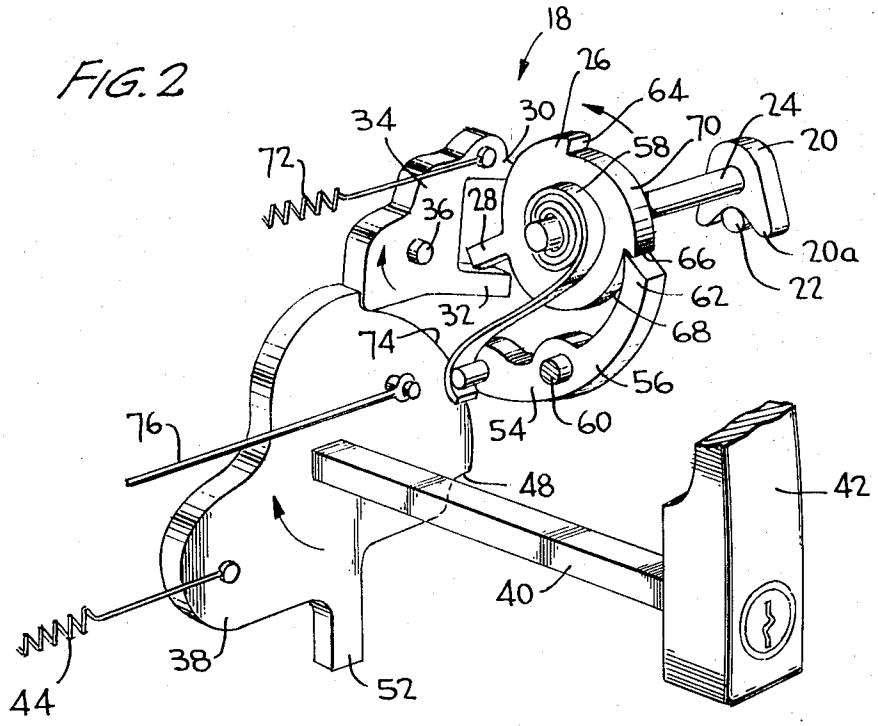

18
26
64
30
34
24
70
58
20
72
36
28
20a
66
22
62
32
68
74
56
54
60
76
48
42
40
38
52
44

FIG. 3

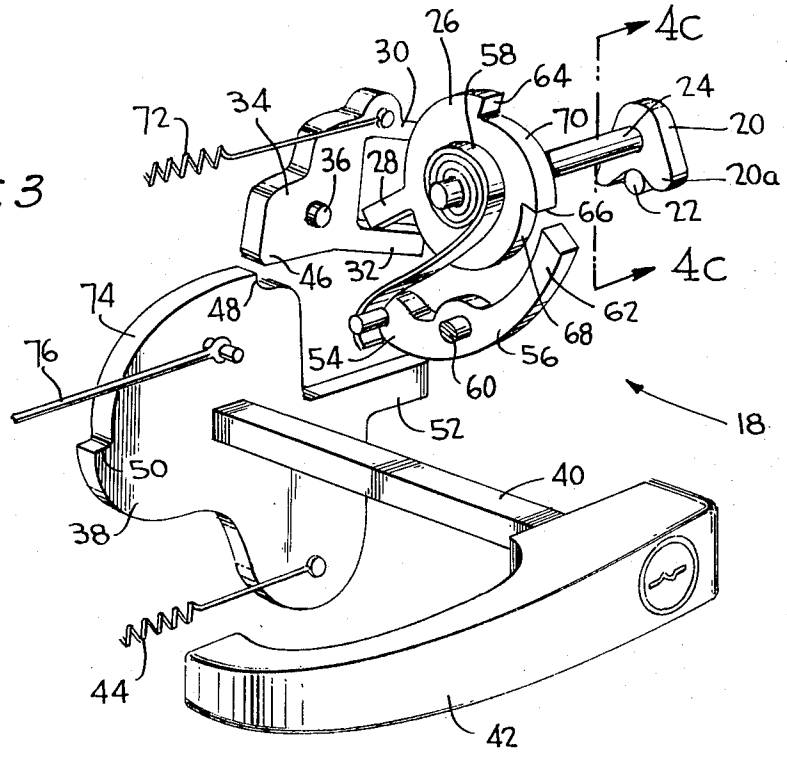

4C
26
30
58
64
24
34
72
70
20
36
28
20a
66
22
4C
46
32
74
48
62
68
76
54
56
60
18
52
50
40
38
44
42

FIG. 4C

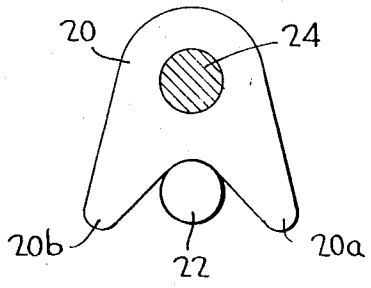


FIG. 4B

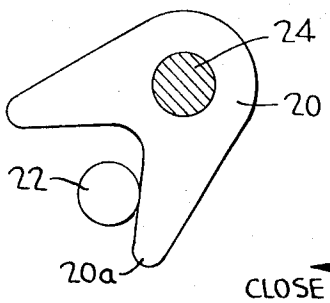


FIG. 4A

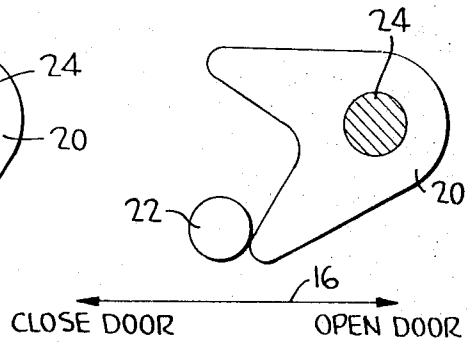


FIG. 5C

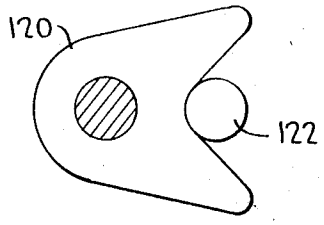


FIG. 5B

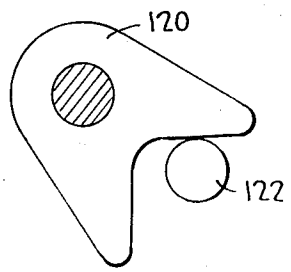
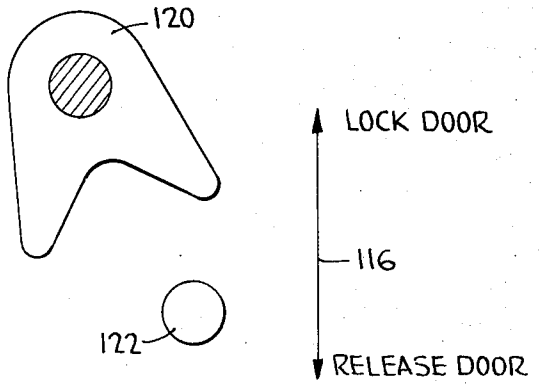


FIG. 5A



SPRING ACTUATED LOCK FOR USE WITH MOTOR VEHICLE DOOR

CROSS REFERENCE TO RELATED APPLICATIONS:

This is a continuation-in-part application of copending U.S. Pat. application Ser. No. 270,288, filed July 10, 1972, now abandoned, which in turn is a continuation application of U.S. Pat. application Ser. No. 125,963, filed Mar. 19, 1971, now abandoned. Applicant claims priority from corresponding German Pat. application Ser. No. P 20 13 690.7, filed Mar. 21, 1970.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to spring actuated locks for use with motor vehicle doors, and particularly to such locks which are particularly adapted for use with sliding motor vehicle doors.

2. Description of the Prior Art

Spring loaded, automatically actuated locks for automobile doors have been used in the past in connection with hinged doors. For cocking purposes, elements of the mechanism have frequently been disposed in the hinge area and the spring mechanism is cocked by swinging the door about the hinge. Such principle of construction is not applicable, however, to sliding doors such as those which might perhaps be utilized in connection with small trucks.

SUMMARY OF THE INVENTION

A very important object of the present invention is to provide a spring actuated lock mechanism capable of performing an automatic locking operation in connection with sliding doors and which also is capable of utilization in connection with hinged doors.

In the spring actuated lock constructed in accordance with the present invention, a trap lever is utilized in connection with a bolt element. The trap lever and the bolt element are relatively movable and disposed for interengagement. Upon interengagement of the bolt and the trap lever, such as, for example, during closing of the door, the trap element is rotated by the bolt into a position where at least a portion of the trap element is disposed, relative to the bolt, to prevent opening of the door. The rotation of the trap releases a spring loaded mechanism which is moved, by virtue of its spring, into a position for positively preventing the counter-rotation of the trap. Accordingly, the door is locked.

To open the door, an operator handle is provided to shift the lock mechanism against the bias of its springs and into a trap lever releasing position. Movement of the door during the opening thereof will cause the trap to rotate about the bolt and such movement of the trap lever will also operate to lock the lock mechanism in its spring loaded, cocked condition ready to automatically operate the next time the trap lever is rotated by interengagement with the bolt during closing of the door.

In accordance with the present invention, a spring actuated lock for use with a motor vehicle door assembly including a frame structure and a door structure is provided. The lock comprises a trap lever mounted on one of the structures for movement between first and second positions. A bolt element is mounted on the other

of these structures and the bolt element and the trap element are relatively shiftable along a predetermined path of travel. The bolt element and the trap lever are also disposed for interengagement during such relative shifting. The bolt element is disposed relative to the trap lever for contacting the latter and moving the trap lever from its first position and into its second position during such relative shifting. The lock also includes an operating lever carried by the trap lever for movement therewith between said first and second positions. A control lever mounted for movement between primary and secondary dispositions is also provided as are means coupled with the control lever for yieldably biasing the latter toward its secondary disposition and away from its primary disposition.

The spring actuated lock also comprises a locking mechanism including a shiftable member operably coupled to the operating lever means for shifting by the latter when the operating lever means moves between its said positions, said mechanism including respective cooperable parts on the member and on the control lever means, which parts are disposed in interengagement when the trap lever and therefor the operating lever are in said first position and the control lever means is in its primary disposition, for holding the control lever means in said primary disposition against the bias of the yieldably biasing means. The parts of the locking mechanism are disposed in disengagement when the operating lever means is in its second position whereby the control lever means is released to permit movement of the latter from its primary disposition to its secondary position under the influence of the yieldably biasing means.

The trap lever is disposed in blocking relationship relative to the path of relative shifting of the trap lever and the bolt element when the trap lever is in its second position. The locking mechanism includes means for preventing movement of the operating lever means from said second position to said first position when the control lever means is in its secondary disposition whereby the relative shifting of the bolt element and the trap lever is prevented. An operator mechanism is provided for shifting the control lever means from its secondary disposition to its primary disposition to thereby release the operating lever means for movement from its second position to its first position whereby to release the trap lever and the bolt element for said relative shifting. Upon opening of the door the trap element and thereby the operating lever means are moved into their first position by virtue of the interengagement between the trap lever and the bolt element whereby the control lever and locking mechanism are held in their cocked position while the door is open.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view, in perspective, of a portion of a motor vehicle door assembly with certain parts broken away to illustrate the spring actuated lock of the present invention in its cocked condition with the door partially opened;

FIG. 2 is a perspective view of the spring actuated lock with its various elements in their actuated condition with the door locked;

FIG. 3 is yet another perspective view of the spring actuated lock with the various elements thereof disposed in their positions while the door is closed but

with the operating handle turned into a position to release the door for opening;

FIGS. 4 A, 4 B and 4 C are cross-sectional views to illustrate the sequence of operations involved when the trap lever and the bolt element become interengaged during door closing operations and in this connection FIG. 4 A is taken along line 4 A — 4 A of FIG. 1 while FIG. 4 C is taken along line 4 C — 4 C of FIG. 3; and

FIGS. 5 A, 5 B and 5 C are cross-sectional views similar to FIGS. 4 A, 4 B and 4 C to illustrate sequentially the movement of the trap lever in another embodiment of the invention wherein relative movement between the trap and the bolt element result from a sliding of the latter on its mounting structure.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1 of the drawings, a motor vehicle door assembly is broadly designated by the numeral **10.** Assembly **10** includes a frame structure **12** and a door structure **14,** the latter being movable relative to frame structure **12** along a predetermined path of travel indicated by the double headed arrow designated by the reference numeral **16.** Preferably, the door structure is of the type disclosed in United States Letters Patent No. 3,100,667; however, it is to be understood, and will be apparent to those skilled in this art, that door structure **14** might also be a hinged door of the type conventionally utilized in connection with automobiles. The preferred door structure, as is fully set forth in the patent referred to above, is a sliding door which is first withdrawn from its opening in a direction generally perpendicular to the major plane of the door and then the entire door is moved in a plane which is generally parallel to the side of the vehicle.

A spring actuated lock constructed in accordance with the present invention is mounted in door assembly **10** and is broadly designated by the reference numeral **18.** Lock **18** includes a rotatable trap lever **20** and a bolt element **22,** the latter being disposed behind lever **20** in FIG. **1** and is therefore illustrated in dotted lines. Rotatable trap **20** is mounted on door structure **14** while bolt element **22** is mounted on frame structure **12.** Accordingly, when door **14** is moved along its predetermined path of travel relative to frame **12,** as illustrated by the arrow **16,** trap lever **20** likewise moves along a parallel predetermined path of travel relative to bolt element **22.** Bolt element **22** and trap lever **20** are disposed for interengagement during the relative shifting thereof along their predetermined path of travel. As can best be seen viewing FIGS. **4** A, **4** B and **4** C, as door **14** closes, leg **20** a of lever **20** contacts bolt element **22** (FIG. **4** A) and as lever **20** continues to move toward bolt element **22** (FIG. **4** B), trap lever **20** is rotated about the axis of shaft **24** until it reaches the position relative to bolt element **22** illustrated in FIG. **4** C.

Of course, as would be understood by one skilled in the art to which this invention pertains, while relative movement is required between trap lever **20** and bolt element **22,** it does not make any critical difference which one is mounted in the door structure **14.** For purposes of the present invention, it is manifest that structure **12** could comprise a movable door structure while structure **14** constitutes a relatively stationary frame structure. In this event the path of relative movement would still be along the arrow **16.**

As can be seen viewing FIGS. 4A, 4B and 4C, trap lever **20** and bolt element **22** move relatively along their predetermined path of travel during the closing of door structure **14** relative to frame structure **12** and during such movement, trap lever **22** is rotated from its first position illustrated in FIGS. **1** and **4A** and into its second position illustrated in FIGS. **2, 3** and **4C.** Also it should be noted that when trap lever **20** and bolt element **22** are disposed relative to one another as illustrated in FIG. **4C,** the legs **20***a* and **20***b* of the trap lever are disposed to prevent relative movement of trap lever **20** and bolt element **22** along their predetermined path of travel unless trap lever **20** is free to rotate about the axis of shaft **24.** Thus, when trap lever **20** and bolt element **22** are disposed as shown in FIG. **4C,** legs **20***a* and **20***b* of trap lever **20** are disposed in blocking relationship relative to the path of relative shifting of trap lever **20** and bolt element **22.**

Trap lever **20** is mounted at one end of shaft **24** and an operating lever means in the nature of a wheel **26** is mounted at the other end of shaft **24.** Both lever **20** and wheel **26** are rigid with shaft **24** and therefor wheel **26** rotates with lever **20** about the axis of shaft **24** between the first position illustrated in FIG. **1** and its second position illustrated in FIGS. **2** and **3.** A projection **28** on wheel **26** cooperates with the legs **30** and **32** of a shiftable fork member **34** for the purpose of rotating the latter about the axis of pivot **36.** Thus, as can be seen from FIGS. **1** and **2,** when wheel **26** moves from its first position illustrated in FIG. **1** and into its second position illustrated in FIG. **2,** projection **28** contacts leg **32** and moves member **34** clockwise about pivot **36.** Thus, member **34** constitutes a shiftable member operably coupled to wheel **26** for shifting by the latter during movement of wheel **26** between its first and second positions.

The lock **18** also comprises an irregularly shaped control lever **38.** Lever **38** is mounted for rotation about the axis of an elongated shaft **40** which extends through the outer panel **14***a* of door **14,** and an operator mechanism in the nature of a door handle **42** is provided at the outer end of shaft **40.** Means, in the nature of a spring **44** is provided for yieldably biasing lever **38** in a clockwise direction (FIG. **1**) about the axis of shaft **40.** Handle **42** and lever **38** are rigidly affixed to shaft **40** so that handle **42** presents external means for shifting lever **38** against the bias of spring **44** from its secondary disposition as illustrated in FIG. **2** and toward its primary disposition as illustrated in FIG. **3.** Conversely, spring **44** constitutes means for yieldably biasing lever **38** away from its primary disposition (FIGS. **1** and **3**) and toward its secondary disposition (FIG. **2**).

Fork member **34** is provided with a projection **46** disposed to cooperate with an abutment **48** on control lever **38** for the purpose of preventing the movement of the latter under the influence of spring **44** when the parts of the lock are conditioned as shown in FIG. **1** with wheel **26** in its first position and with lever **38** in its primary disposition. Projection **46** is also disposed for engagement with a second abutment **50** of lever **38** for limiting the movement of the latter under the influence of spring **44** after fork member **34** has been shifted by wheel **26** into its disposition illustrated in FIGS. **2** and **3.** Thus, projection **46** and abutment **48** comprise cooperable parts on member **34** and lever **38**

which are disposed in interengagement to prevent rotation of lever **38** under the influence of spring **44** when lever **20** and wheel **26** are in their first position and lever **38** is in its primary disposition. Also, projection **46** and abutment **48** present parts which are disengaged when wheel **26** and lever **20** are in their second position to permit lever **38** to move in a clockwise direction (FIGS. **1** and **2**) under the influence of spring **44.**

An extension **52** on lever **38** is disposed to contact one end **54** of a pawl **56** when lever **38** is in its primary disposition as is illustrated in FIGS. **1** and **3.** A coil spring **58** is mounted about one end of shaft **24** in position to yieldably urge pawl **56** to rotate in a counterclockwise direction (FIGS. **1** through **3**) about the axis of pivot **60.** The other end **62** of pawl **56** is disposed to cooperate with a pair of circumferentially spaced ratchet stops **64** and **66** on wheel **26.** The generally circumferentially extending surface **68** on wheel **26** which leads up to stop **66** is disposed at a lesser radius with respect to the axis of shaft **24,** than the circumferentially extending surface **70** which leads up to stop **64.** Spring **58** urges end **62** of pawl **56** against surface **68** when the lock is conditioned as shown in FIG. **2.** However, when lever **38** is rotated to bring extension **52** into contact with end **54** of pawl **56** the latter is rotated in a clockwise direction against the bias of spring **58** whereby end **62** thereof is lifted away from surface **68** and into a position (see FIG. **3**) where end **62** clears surface **70** of wheel **26.** When pawl **56** is in its position illustrated in FIG. **2,** movement of wheel **26** in a clockwise direction is prevented by the interengagement of end **62** of pawl **56** and stop **66** of wheel **26.** Thus, when pawl **56** is in its FIG. **2** position, the same may be said to be in its movement preventing position. On the other hand, when pawl **56** is in the position illustrated in FIG. **3,** and **62** thereof will be out of alignment with stop **66** and rotation of wheel **26** in a clockwise direction will not be interferred with. Thus, when pawl **56** is in its position illustrated in FIG. **3,** it can be said that pawl **56** is out of a movement prevention position relative to wheel **26.** Thus, pawl **56** and stops **64** and **66** present a pawl and ratchet mechanism for preventing movement of wheel **26** when lever **38** is in its secondary disposition.

In operation, starting at a point when door **14** is open relative to frame structure **12,** the various elements of lock **18** are disposed as is indicated in FIG. **1.** As door **14** is moved toward structure **12** along the path of travel designated by arrow **16,** leg **20***a* of trap **20** will come into contact with bolt element **22** and as door **14** continues to move toward frame structure **12** (FIG. **4B**), trap lever **20** will be rotated about the axis of shaft **24** until trap **20** and element **22** assume relative positions such as are shown in FIG. **4C.** Simultaneously with the rotation of trap **20,** shaft **24** and wheel **26** will also be rotated and projection **28** on wheel **26** will contact leg **32** of fork member **34** whereby the latter will be rotated about pivot **36** in a clockwise direction (FIG. **1**) to lift projection **46** out of engagement with abutment **48** of lever **38.** Instantaneously, therefor, the elements of lock **18** will be conditioned as is shown in FIG. **3** where spring **44** is free to act on lever **38** to rotate the latter clockwise about the axis of shaft **40** so that lever **38** moves into its disposition illustrated in FIG. **2.** As lever **38** moves clockwise, extension **52** comes out of engagement with end **54** of pawl **56** whereby the latter is rotated by spring **58** in a counterclockwise direction about pivot **60** and end **62** thereof drops into abutting relationship with surface **68** and stop **66** of wheel **26.** Thus, springs **58** and **44** have automatically moved lever **38** and pawl **56** into a position whereby movement of wheel **26** and trap lever **20** is prevented.

Pawl **56** will positively prevent the rotation of wheel **26** in a clockwise direction and therefor the clockwise rotation of trap **20** will also be positively prevented by the interengagement of end **62** of pawl **56** with stop **66.** Thus, the legs **20***a* and **20***b* of trap **20** are disposed to prevent relative movement between trap **20** and bolt element **22** in a direction to open door **14.**

When it is desired to open door **14,** handle **42** may be grasped manually and rotated in a counterclockwise direction about the axis of shaft **40.** Lever **38** is therefor also caused to rotate in a counterclockwise direction against the bias of spring **44** until such time as extension **52** has contacted end **54** of pawl **56** to lift end **62** thereof out of engagement with stop **66.** At the same time, abutment **48** of lever **38** will have been brought into alignment with projection **46** of fork member **34.** Thus, so long as handle **42** is manually held, the lock elements will be positioned as is illustrated in FIG. **3.** Since end **62** of pawl **56** has been lifted out of engagement with stop **66,** wheel **26** and lever **20** are free to rotate in a clockwise direction. Accordingly, door **14** may be pulled away from frame **12** in a direction along arrow **16** and as the door **14** moves away from frame **12** the interaction between bolt element **22** and trap lever **20** will cause the latter to be rotated about the axis of shaft **24** until it reaches a position approximately as illustrated in FIG. **4B.** Thus, door **14** will be free to open. Spring **58** operates to exert a clockwise twist on shaft **24** such that trap **20** is fully rotated into the position thereof illustrated in FIG. **4A** and at the same time projection **28** moves out of engagement with leg **32** of fork member **34** and the latter is rotated in a counterclockwise direction about the axis of pivot **36** by the action of a spring **72.** Thus, all of the various elements of lock **18** have once again moved into the positions illustrated in FIG. **1.**

As is manifest from the foregoing description, member **34** and pawl **56** comprise a locking mechanism for preventing movement of the operating lever means **26** from its second position (FIG. **2**) to its first position (FIG. **1**) when the control lever means **38** is in its secondary disposition (FIG. **2**) whereby relative shifting of bolt element **22** and trap lever **20** is prevented. The locking mechanism presented by fork member **34** and pawl **56** also operates to hold control lever means **38** in its primary disposition (FIG. **1**) against the bias of yieldable biasing means **44** when trap lever **20** and operating lever means **26** are in their first position (FIG. **1**) and control lever means **38** is in its primary disposition (FIG. **1**).

As an alternate embodiment the invention contemplates a spring actuated lock such as the lock **18** wherein a pawl and ratchet mechanism is not required for preventing movement of operating lever means **26** when control lever **38** is in its secondary disposition. In accordance with this embodiment, legs **30** and **32** of fork member **34** may be shaped such that each is in continual contact with projection **28** of wheel **26.** Thus, any movement of wheel **26** immediately results in a corresponding movement of fork member **34.** Also, the surface **74** on the periphery of lever **38** is shaped such

that projection **46** of member **34** is in continual contact with surface **74** during the movement of lever **38** between its primary and secondary dispositions. Also, when lever **38** is in its secondary disposition as shown in FIG. **2**, projection **46** remains in engagement with surface **74**. The operation of this embodiment of the lock is similar to the operation of the first embodiment. As door **14** is moved toward frame **12**, leg **20***a* of trap **20** contacts bolt element **22** and trap lever **20** is therefore rotated about the axis of shaft **24**. As shaft **24** is rotated by trap **20**, wheel **26** is also rotated about the axis of shaft **24**. Since legs **30** and **32** of fork member **34** are in continual contact with projection **28** in this embodiment, fork member **34** immediately begins to rotate in a clockwise direction about pivot **36** when wheel **26** begins to rotate during the rotation of trap **20**. When wheel **26** and fork member **34** reach the positions thereof indicated in FIG. **3**, lever **38** will be free to rotate into its second disposition under the influence of spring **44**. This rotation of lever **38** will move surface **68** under projection **46** of member **34** whereby movement of the latter in a counterclockwise direction about pivot **36** is positively prevented. Since in this embodiment, leg **30** of member **34** is in continual contact with projection **28**, the prevention of counterclockwise rotation of member **34** will positively prevent clockwise rotation of wheel **26** and thereby also rotaton of trap lever **20** is prevented. When handle **42** and thereby lever **38** are moved in a counterclockwise direction against the bias of spring **44**, projection **46** is brought into alignment with abutment **48** whereby member **34**, wheel **26** and trap **20** will be free to rotate in directions necessary to bring trap lever **20** out of blocking relationship with respect to bolt element **22**. In this embodiment, the member **34**, including its legs **30** and **32** and its projection **46**, and the surface **74** and abutment **48** of lever **38** present a locking mechanism which is operable to perform the same functions as the locking mechanism presented by member **34** and pawl **56** in the first embodiment.

Another embodiment of the invention is illustrated in FIGS. **5A**, **5B** and **5C**. In this embodiment trap **120** is similar to trap **20** and bolt **122** is similar to bolt **22** except that relative movement between trap **120** and bolt element **122** does not result from the closing of door **14**. Rather, assuming that trap **120** is carried by a door such as the door **14** and bolt element **122** is mounted on a frame such as the frame structure **12**, movement of the door and the trap **120** to the right in FIGS. **5A**, **5B** and **5C** will open the door and correspondingly, movement of the door and trap **120** to the left relative to element **122** will close the door. Viewing FIG. **5A**, bolt element **122** and trap **120** are disposed such that horizontal movement of the trap **120** relative to the element **122** is not prevented. FIG. **5A** therefore represents the disposition of element **122** and trap **120** after the door has been fully closed but before the lock mechanism has been actuated.

In this embodiment, element **122** is preferably mounted for vertical shifting on frame **12** along the relative path of travel indicated by the arrow designated by reference numeral **116**. To operate the lock, element **122** is shifted vertically relative to trap **120** along path **116** and the trap is contacted by element **122** and is rotated (FIG. **5B**) until it assumes the position indicated in FIG. **5C**. With trap lever **120** and bolt element **122** disposed as indicated in FIG. **5C**, it will not be possible to open the door.

All of the other relative movements of the lock mechanism are as described above in connection with the embodiment illustrated in FIGS. **1** through **3**. That is to say, rotation of trap **120** results in rotation of wheel **26** which lifts projection **46** of member **34** out of engagement with abutment **48**. Thus, member **38** rotates under the influence of spring **44** to remove extension **52** from contact with end **54** of pawl **56** whereby end **62** of pawl **56** is dropped into engagement with stop **66** of wheel **26**. Accordingly, rotation of wheel **26** in a direction to unlock the door is positively prevented until such time as handle **42** is rotated.

As another alternative structure, an operating rod **76** may be provided for remote operation of lever **38**. Thus, one desiring to open the door would pull rod **76** whereby lever **38** would be rotated in a counterclockwise direction against the bias of spring **44**. This is fully analogous to the operation of the lock by rotating lever **38** with handle **42**.

I claim:

1. A spring actuated lock for use with a motor vehicle door assembly including a frame structure and a door structure comprising:

a trap lever mounted on one of said structures for movement between first and second positions;

a bolt element mounted on the other of said structures, said bolt element and said trap lever being relatively shiftable along a predetermined path of travel and being disposed for interengagement during said relative shifting,

said bolt element being disposed relative to the trap lever for contacting the latter and moving the trap lever from its first position and into its second position during said relative shifting;

operating lever means carried by the trap lever for movement therewith between said first and second positions;

control lever means mounted for movement between primary and secondary dispositions;

means coupled with the control lever for yieldably biasing the latter toward its secondary disposition and away from its primary disposition;

a locking mechanism including a shiftable member operably coupled to the operating lever means for shifting by the latter when the operating lever means moves between its said positions, said mechanism including respective cooperable parts on said member and on said control lever means, which parts are disposed in interengagement when the trap lever and therefore the operating lever means are in said first position and the control lever means is in its primary disposition for holding the control lever means in said primary disposition against the bias of the yieldably biasing means,

said parts being disposed in disengagement when the operating lever means is in said second position whereby the control lever means is released to permit movement of the latter from its primary disposition to its secondary disposition under the influence of the yieldably biasing means,

said trap lever being disposed in blocking relationship relative to the path of relative shifting of the trap lever and the bolt element when the trap lever is in its second position,

said locking mechanism including means for preventing movement of the operating lever means from said second position to said first position when the control lever means is in its secondary disposition whereby the relative shifting of the bolt element and the trap lever is prevented; and

an operator mechanism for shifting said control lever means from its secondary dispostion to its primary disposition to release the operating lever means for movement from its second position to its first position whereby to release the trap lever and the bolt element for said relative shifting.

2. A lock as set forth in claim **1** wherein said means for preventing movement of the operating lever means comprises a pawl and ratchet mechanism, said pawl being spring biased into a movement preventing position and being disposed for engagement by an element of the control lever means when the latter is moved toward its primary disposition for moving the pawl out of said movement preventing position.

3. A lock as set forth in claim **1** wherein said means for preventing movement of the operating lever means comprises abutting surfaces on the shiftable member and on the control lever means.

4. A lock as set forth in claim **1** wherein said parts of the locking mechanism include a projection on the shiftable member and an abutment on the control lever.

5. A lock as set forth in claim **4** wherein said means for preventing movement of the operating lever comprises a surface on said control lever means disposed to abut said projection when the control lever means is in its second disposition.

6. A lock as set forth in claim **1** wherein said bolt element is mounted on said frame structure and said trap lever is mounted on said door structure.

7. A lock as set forth in claim **1** wherein said door structure and said frame structure are relatively shiftable along said predetermined path of travel whereby relative shifting of said door structure and said frame structure results in said relative shifting of the bolt element and the trap lever.

8. A lock as set forth in claim **1** wherein said bolt element is shiftable on its structure whereby shifting of the element on its structure results in said relative shifting of the bolt element and the trap lever.

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