April 25, 1961 J. D. LESLIE 2,981,561

SELF-CLOSING LOCK STRIKER

Filed Nov. 2, 1959 2 Sheets-Sheet 1

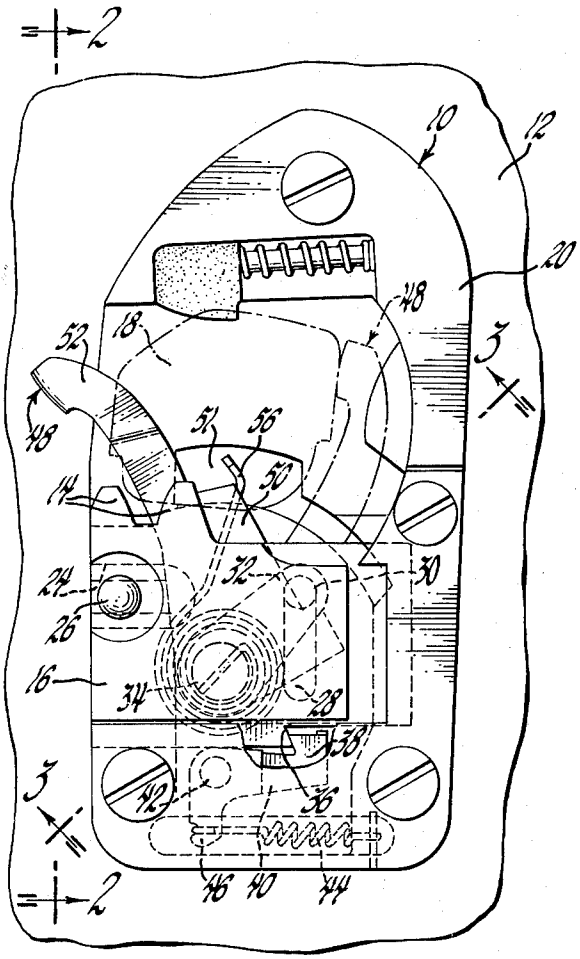

Fig. 1

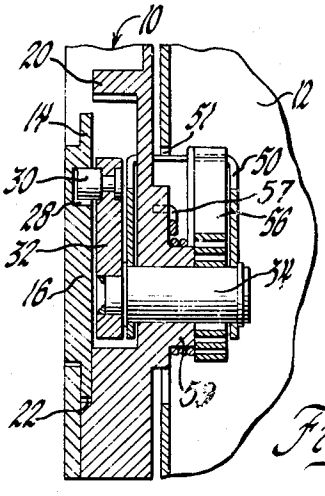

Fig. 3

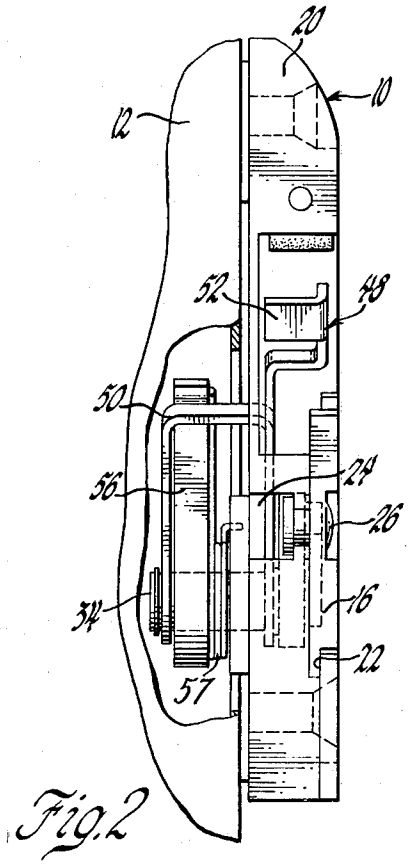

Fig. 2

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SELF-CLOSING LOCK STRIKER

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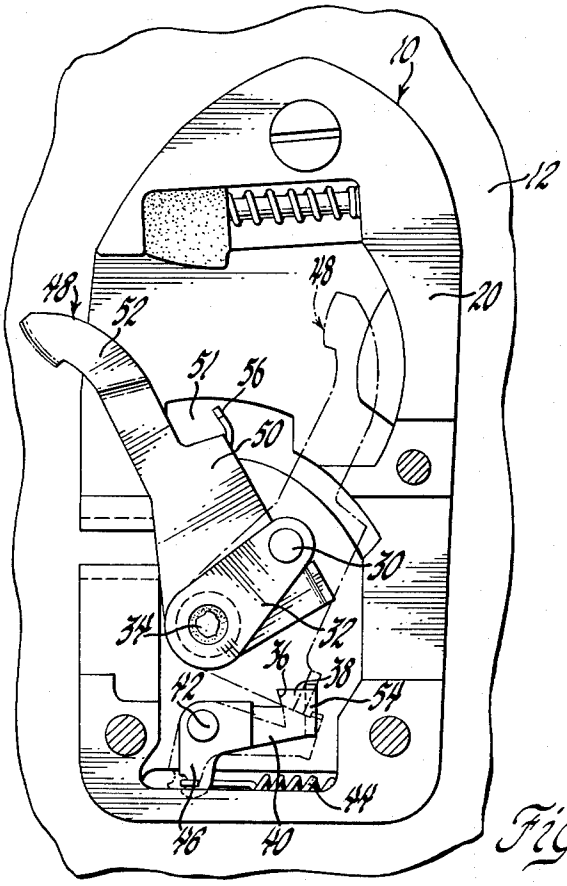

Fig. 4

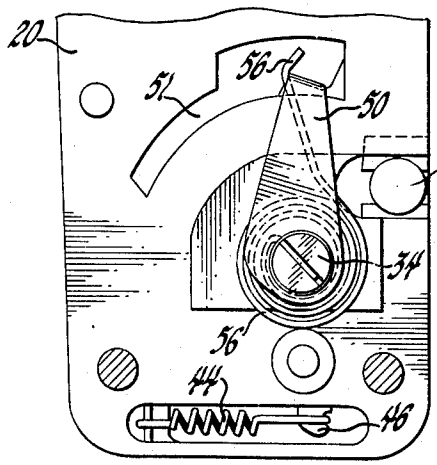

Fig. 5

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SELF-CLOSING LOCK STRIKER

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6 Claims. (Cl. 292—341.13)

The present invention relates to a door latching mechanism and more particularly one in which a unique striker arrangement is provided whereby the striker provides the final door closing force.

With the continually increased weight of vehicle doors, it is desirable if occupants can be relieved of some of the work necessary to close and latch these doors. Accordingly, in the present invention a unique spring loaded striker device is provided whereby the striker may be moved transversely, relative to the vehicle centerline, to supply the final amount of door closing force. More specifically the present invention includes a wind-up lever adapted to be engaged by the door during its final closing movement in such a way that the lever charges a spring which through a suitable linkage mechanism is connected to a transversely slidable striker. After the door bolt member has engaged the striker the wind-up lever is adapted to release said spring whereby the striker and spring are adapted to complete the final door closing movement.

The details as well as other objects and advantages of the present invention will be apparent from a perusal of the detailed description which follows.

In the drawings:

Figure 1 is an elevational view of the door striker mechanism embodying the subject invention;

Figure 2 is an end view of Figure 1, taken along line 2—2;

Figure 3 is a view along line 3—3 of Figure 1;

Figure 4 is an elevational view of the striker mechanism with tooth and cover plates removed; and

Figure 5 is a rear view of the striker assembly.

A striker plate assembly **10** is adapted to be mounted in the conventional manner upon a door pillar or body supporting section **12**. In order to simplify the disclosure, the door mounted rotary bolt mechanism has not been shown. However, such rotary bolt is adapted to coact with corresponding teeth **14** formed on a slidable striker plate **16**. The door lock rotary bolt cover **18** is shown in dotted lines in Figure 1 since it coacts with a portion of the subject door closing mechanism as will be seen subsequently. While the rotary bolt latch mechanism has not been shown, it is of conventional design and may be of the type shown in Patent 2,877,043.

A striker frame is shown at **20** and as best seen in Figure 2 and slidably supports striker plate **16** in a recessed portion **22** thereof. Frame **20** also includes an elongated slot **24** adapted to receive a stud **26** fixed to striker plate **16** and which stud also supports the plate to the frame for sliding movement. The inner face of striker plate **16** includes a generally vertically extending groove or notch **28** which is adapted to receive a stud **30** fixed to a lever **32**. Lever **32** is, inturn, fixed to a shaft **34** rotatably mounted on striker frame **20**. Thus, assuming it were otherwise free to move, rotation of lever **32** would cause striker plate **16** to move transversely of frame **20** due to the cam and follower relationship between groove **28** and stud **30**.

The lower edge of striker plate **16** includes an inclined notch **36** which is adapted to be engaged by a similarly shaped end **38** of a bell crank type lever **40**. Lever **40** is pivotally mounted at **42** to striker frame **20** and is biased in a counterclockwise direction through a tension spring **44**. One end of spring **44** is fixed to arm **46** of lever **40** and the other end anchored to frame **20**. Thus with striker plate **16** in its left position, as shown in Figure 1, lever end **38** is moved into locking engagement with striker plate notch **36** preventing transverse or rightward movement of the plate.

A wind-up lever **48** includes a U-shaped portion **50** through which the lever is pivotally mounted on shaft **34**. Frame **20** includes an arcuate slot **51** through which lever portion **50** extends to straddle the lower portion of the frame. Wind-up lever **48** also includes an upwardly extending portion **52** which, when the door is open, projects upwardly and outwardly beyond striker frame **20** as seeen in Figure 1. As best seen in Figure 4, the lower end of U-shaped portion **50** of wind-up lever **48** is adapted to engage a tab **54** extending outwardly from striker plate locking lever **40** when the wind-up lever is rotated in a clockwise direction. Assuming this clockwise rotation proceeds far enough, wind-up lever **48** will disengage lever **40** from striker plate **16** permitting the latter to be moved transversely of the striker frame.

A torsion spring member **56** is anchored at one end to wind-up lever **48** and secured at its other end to shaft **34**. The torsion force of spring **56** is such that it tends to move shaft **34** and hence lever **32** in a clockwise direction relative to wind-up lever **48**. Thus, assuming it were free to move, striker plate **16** would be moved to the right, as viewed in Figure 1, as wind-up lever **48** would be rotated in a clockwise direction.

The operation of the striker device is as follows: with the vehicle door open the parts are in the position shown in Figure 1. Thereafter, as the door approaches its closed position, door lock rotary bolt cover **18** engages wind-up lever **48** and rotates the same in a clockwise direction, shown in dotted lines in Figure 1, thereby charging torsion spring **56**. During this movement the rotary bolt member has engaged with teeth **14** of sliding striker plate **16** so as to be operatively connected thereto. As the door approaches its nearly closed position, wind-up lever **48** is rotated to such an extent that the lower end thereof engages tab **54** of locking lever **40** rotating the same in a clockwise direction and thereby releasing plate **16** for movement. The stored energy in torsion spring **56** now causes shaft **34** to rotate in a clockwise direction, as viewed in Figure 1, imparting a similar rotation to lever **32** which in turn through stud **30** camming in plate groove **28** causes the plate to move transversely to the right and thereby completing the closing movement of the door.

A spring **57** is coiled about shaft supporting boss **59** formed on striker frame **20**. One end of spring **57** is anchored to frame **20** while the other end extends into engagement with U-shape portion **50** of wind-up lever **48**. Thus as wind-up lever **48** is rotated in a clockwise direction, as viewed in Figure 1, spring **57** is also charged or tightened.

When striker plate **16** is released by lever **48** unlatching lever **40**, torsion spring **56** is unwound or essentially uncharged in completing the door closing movement, supra. Spring **57**, however, remains charged and when the vehicle door is reopened returns plate **16** and lever **48** to the positions shown in Figure 1.

It is apparent that various detailed modifications of the present invention are possible within the intended scope of the invention as set forth in the appended claims.

What is claimed is:

1. A vehicle door closing mechanism comprising a

striker frame mounted on the vehicle body, a striker plate mounted on said frame for sliding movement transversely of the vehicle centerline, means for latching said plate in a transversely outboard position when the door is open, a spring device connected intermediate said plate and said frame for urging the plate toward a transversely inboard position and means for releasing said plate latching means when the door approaches its closed position whereby said plate is adapted to pull the door to a fully closed position.

2. A vehicle door closing mechanism as set forth in claim 1 in which said spring device includes a door actuated lever for charging said device as the door moves toward its closed position.

3. A vehicle door closing mechanism comprising a striker frame mounted on the vehicle body, a striker plate mounted on said frame for sliding movement transversely of the vehicle centerline, means for latching said plate in a transversely outboard position when the door is open, spring means interconnecting said plate and frame for urging the plate toward a transversely inboard position, and a door actuated lever for charging said spring means, said lever being adapted to release the plate latching means when the door approaches its closed position whereby said plate is adapted to pull the door to a fully closed position.

4. A vehicle door closing striker assembly comprising a frame, a striker plate slidably mounted in said frame for movement transversely of the vehicle centerline, a first lever for engaging said striker plate to retain the same in an outward position when the vehicle door is open, a second lever pivotally mounted on said frame and including one end extending outwardly beyond said frame and plate, a third lever pivotally mounted on said frame and including one end adapted to extend within a camming groove in said striker plate, rotary movement of said third lever being adapted to impart a sliding movement to said striker plate, and torsion spring means intermediate said second and third levers, rotation of said second lever toward said frame imparting a force to said torsion spring tending to move said striker plate inwardly of said frame in the direction of the vehicle centerline, said second lever being adapted to engage with said first lever to move the latter out of engagement with said sliding plate to permit said torsion spring to move said striker plate inwardly.

5. A vehicle door closing striker assembly comprising a frame, a striker plate slidably mounted in said frame for movement transversely of the vehicle centerline, a shaft rotatably mounted on said frame, a first lever for engaging said striker plate to retain the same in an outward position when the vehicle door is open, a second lever pivotally mounted on said shaft and including one end extending outwardly beyond said frame and plate, a third lever fixed to said shaft and including one end adapted to extend within a camming groove in said striker plate, rotary movement of said third lever being adapted to impart a sliding movement to said striker plate, and torsion spring means interconnecting said second lever and said shaft, rotation of said second lever toward said frame imparting a force to said torsion spring tending to move said striker plate inwardly of said frame in the direction of the vehicle centerline, said second lever being adapted to engage with said first lever to move the latter out of engagement with said sliding plate to permit said torsion spring to move said striker plate inwardly.

6. A vehicle door closing striker assembly comprising a frame, a striker plate slidably mounted in said frame for movement transversely of the vehicle centerline, a first lever for engaging said striker plate to retain the same in an outward position when the vehicle door is open, a spring member biasing said lever into engagement with said plate, a second lever pivotally mounted on said frame and including one end extending outwardly beyond said frame and plate, a third lever pivotally mounted on said frame and including one end adapted to extend within a camming groove in said striker plate, and torsion spring means intermediate said second and third levers, rotation of said second lever toward said frame imparting a force to said torsion spring tending to move said striker plate inwardly of said frame in the direction of the vehicle centerline, said second lever being adapted to engage with said first lever to move the latter out of engagement with said sliding plate to permit said torsion spring to move said striker plate inwardly.

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