

Aug. 1, 1961

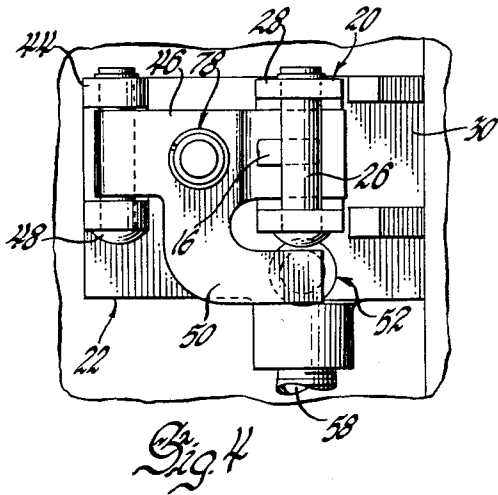
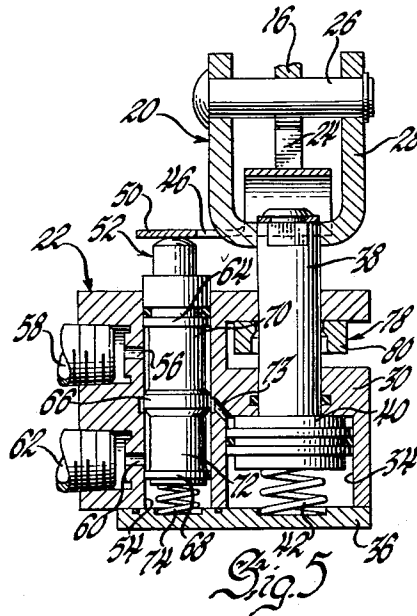
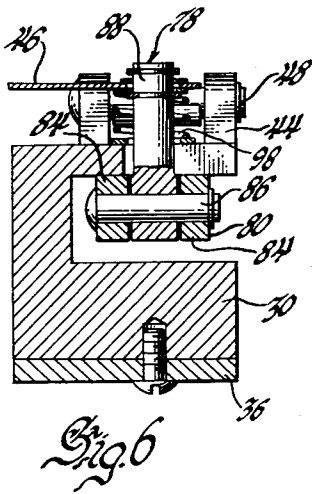
R. L. WHITE

2,994,550

DECK LID PULL-DOWN APPARATUS

Filed Sept. 2, 1959

2 Sheets-Sheet 2



INVENTOR.
Robert L. White
BY
L. P. Barnard
ATTORNEY

1

2,994,550

DECK LID PULL-DOWN APPARATUS

Robert L. White, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Filed Sept. 2, 1959, Ser. No. 837,697

5 Claims. (Cl. 292-341.16)

The present invention relates to a pull-down apparatus in which a rear deck lid member is moved to a tightly closed position by a hydraulic servo mechanism and at the same time held in the closed position in the event of a loss of fluid pressure in the servo.

In general the present deck lid mechanism includes a latch member mounted on the deck lid which is adapted to be moved to a partially closed position in which the latch engages a movable striker mechanism. Upon engagement of the striker and latch fluid pressure is admitted to a servo moving the striker and hence the deck lid into a sealed relationship with the supporting body structure. In addition, actuation of the servo mechanism in turn sets a drag lock which prevents the deck lid from becoming unsealed in the event of a loss of pressure in the servo.

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

In the drawings:

FIGURE 1 is a partially sectioned elevational view of a deck lid after the latch has just engaged the striker;

FIGURE 2 is a view similar to that of FIGURE 1 in which the deck lid has been moved into sealing relationship with the supporting structure;

FIGURE 3 is an enlarged view of the drag lock mechanism;

FIGURE 4 is a view along line 4-4 of FIGURE 1;

FIGURE 5 is a view along line 5-5 of FIGURE 1; and

FIGURE 6 is a view along line 6-6 of FIGURE 1.

A portion of a vehicle body is indicated at 10 and includes a resilient sealing strip 12 mounted about the opening adapted to be closed by a movable deck lid indicated generally at 14. A latch 16 is pivotally mounted on lid 14 through a pin 18 and is adapted when the lid is moved to a closed position to engage with a striker member 20 which is a part of the deck lid snubber mechanism indicated generally at 22. As seen in the drawings, latch 16 includes a slot 24 adapted to engage with striker pin 26 mounted on a supporting bracket 28.

Snubber mechanism 22 includes a casing 30 having an opening 32 formed therethrough and which opening terminates in a cylinder chamber 34 enclosed by a cover plate 36. A rod 38 is fixed to striker bracket 28 and extends through opening 32 and terminates at its other end in a piston 40 slidably mounted in cylinder 34. A spring member 42 is biased between casing cover plate 36 and piston 40 and is adapted to urge striker 20 in an upwardly direction. Striker 20 and piston 40 are, in effect, integral.

A trunnion 44 is formed on casing 30 and pivotally supports one end of a lever 46 through a pin 48. The other end of lever 46 extends within striker bracket 28 so as to be engaged by latch 16 when deck lid 14 is moved toward a closed position. As best seen in FIGURES 4 and 5, lever 46 includes an offset tab or extension 50 which is adapted to engage with a spindle valve 52 slidably mounted within a chamber 54 in casing 30. Spindle valve chamber 54 is communicated with a source of fluid under pressure, preferably oil from an accumulator not shown, through a port 56 and a conduit 58. Chamber 54 is also communicated with an exhaust port 60

2

which through a conduit 62 returns fluid to a reservoir, not shown.

Spindle valve 52 includes a plurality of lands 64, 66 and 68 defining a pair of peripherally reduced portions 70 and 72 which, depending on the position of the spindle valve, either communicate fuel under pressure to or exhaust pressure from the upper side of striker piston 40 through a passage 73. A spring 74 normally biases spindle valve 52 in its upper position in which the spindle engages extension 50 of lever 46 permitting the upper side of piston 40 to be exhausted whereby the spring will maintain the striker 20 in its upper position as shown in FIGURE 5.

When deck lid 14 is manually moved toward a closed position in which latch 16 engages lever 46 pivoting the same downwardly, spindle valve 52 is moved downwardly within cylinder 54 communicating the upper side of piston 40 with the fluid under pressure in conduit 58 causing the piston and striker to be moved downwardly thereby pulling the deck lid 14 into a tightly sealed relationship with resilient seal 12.

To prevent the deck lid 14 from becoming unsealed in the event of a loss of fluid pressure in line 58, a drag lock mechanism indicated generally at 78 is provided. Drag lock 78 includes a collar 80 having a central opening 82 through which piston rod 38 extends. Collar 80 includes bifurcated legs 84 by which the collar is articulated to a control rod 88. One end of control rod 88 and collar 80 are disposed within a cavity 90 formed in casing 30. The other end of rod 88 is operatively loosely connected to lever 46 such that after the lever is rotated to actuate spindle valve 52 and move the deck lid to a snubbed or sealed position, collar 80 will be cocked or canted relative to the axis of piston rod 38, as shown in FIGURES 2 and 3. In its cocked position the opposite edges 92 and 94 of the opening 82 formed in collar 80 engage the piston rod and lock it against movement. Thus in the event of a loss of fluid pressure in line 58, deck lid 14 will be maintained in a sealed position. As best seen in FIGURE 3, collar 80 includes a counterbored portion 96 which permits sufficient cocking of the collar relative to piston rod 38 to insure proper locking.

A conventional latch operating mechanism may be provided for rotating latch 16 out of engagement with striker pin 26 to open deck lid 14. When this disengagement occurs a spring 98 urges lever 46 upwardly carrying drag lock rod therewith to unlock piston rod 38. At the same time, spring 74 is permitted to move valve 52 upwardly thereby exhausting the pressure on top of piston 40. Accordingly spring 42 moves piston 40 and striker 20 to its upper position preparatory to engagement by latch 16.

I claim:

1. A deck lid locking mechanism of the type comprising a latch member movably mounted on a deck lid, a supporting member, and a striker assembly for releasably engaging the latch member in which the striker assembly includes a striker member movably mounted on said supporting member and adapted to lockingly engage with said latch member when said deck lid is in a substantially closed position, a servo piston operatively connected to said striker member, a casing member having a cylinder slidably supporting said servo piston therein, said casing being mounted on said supporting member, a valve member adapted to connect a fluid pressure source with said piston to move said striker and hence said deck lid into sealing engagement with said supporting member, a lever pivotally supported at one end upon said casing, spring means urging said lever into engagement with said latch, said valve member adapted to engage said lever intermediate its ends whereby said

3

latch is adapted to actuate said valve when it engages said striker member, and means for locking said servo piston against movement to retain the deck lid in sealing relation with said supporting member in the event of a loss of fluid pressure.

2. A deck lid locking mechanism of the type comprising a latch member movably mounted on a deck lid, a supporting member, and a striker assembly for releasably engaging the latch member in which the striker assembly includes a striker member movably mounted on said supporting member and adapted to lockingly engage with said latch member when said deck lid is in a substantially closed position, a servo piston including a rod operatively connected to said striker member, a casing member having a cylinder slidably supporting said servo piston therein, said casing being mounted on said supporting member, a valve member adapted to connect a fluid pressure source with said piston to move said striker and hence said deck lid into sealing engagement with said supporting member, a lever pivotally supported at one end upon said casing, spring means urging said lever into engagement with said latch, said valve member adapted to engage said lever intermediate its ends whereby said latch is adapted to actuate said valve when it engages said striker member, and means operatively connected to said lever for locking said servo piston against

4

movement to retain the deck lid in sealing relation with said supporting member in the event of a loss of fluid pressure.

3. A deck lid locking mechanism of the type set forth in claim 2 in which said piston locking means includes a centrally apertured collar through which said piston rod extends, said collar being adapted to be moved into engagement with said rod to lock the piston against movement.

4. A deck lid locking mechanism of the type set forth in claim 3 in which said collar is adapted to be maintained normal to the piston rod axis permitting free movement of the rod relative to the collar, said lever being adapted to cock said collar from said normal position to engage and lock said rod against movement.

5. A deck lid locking mechanism of the type set forth in claim 4 in which a rod is articulated between said lever and said collar to control the position of said collar relative to the piston rod in accordance with the position of said lever.

References Cited in the file of this patent

UNITED STATES PATENTS

2,896,990	Garvey et al. _____	July 28, 1959
2,916,319	Du Bois _____	Dec. 8, 1959