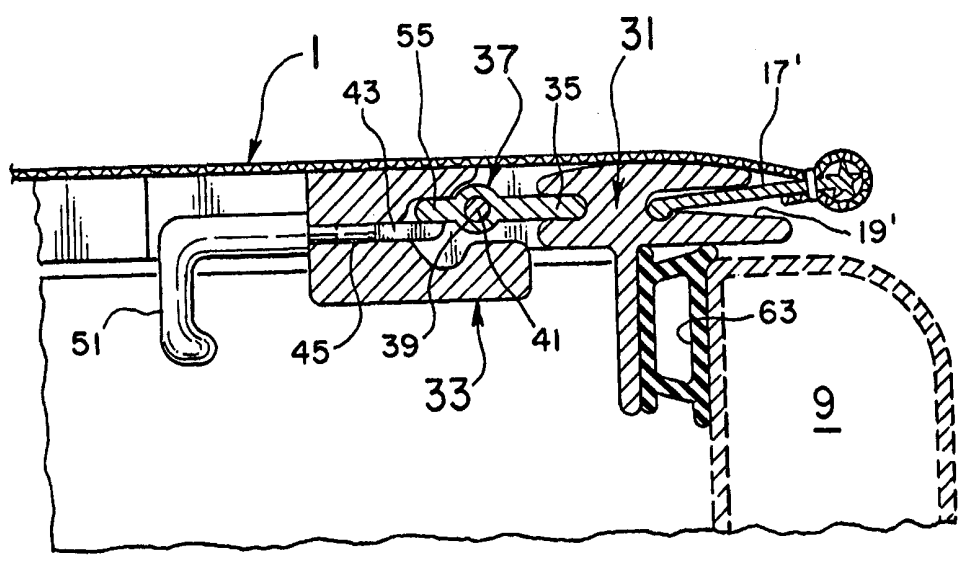




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<p>(21) International Application Number: PCT/US99/20821 (22) International Filing Date: 10 September 1999 (10.09.99) (30) Priority Data: 60/100,039 11 September 1998 (11.09.98) US (71) Applicant: BESTOP, INC. [US/US]; 2100 W. Midway Boulevard, Broomfield, CO 80020 (US). (72) Inventor: HUOTARI, Keijo, J.; 12434 Orchardwood Drive, Fenton, OH 48430 (US). (74) Agents: CARSON, W., Scott et al.; Dorr, Carson, Sloan & Birney, P.C., 3010 E. 6th Avenue, Denver, CO 80206 (US).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p>

(54) Title: COMBINATION OF A LOCKABLE, SOFT TONNEAU COVER AND LOCKABLE TAILGATE



(57) Abstract

The combination of a lockable, soft, flexible tonneau cover (1) for the bed of a pickup truck (3) or similar vehicle and a lockable tailgate (9). The tonneau cover (1) is positioned over the bed and attached to rails (27, 21) on the front (5) and side (7) walls of the vehicle (3) and to a rear rail (31) suspended across the tailgate opening (9'). A catch (43) is provided to selectively lock the rear rail (31) and the attached cover (1) in place over the bed. In the preferred embodiment, the catch (43) is only accessible through the tailgate opening (9') and the tailgate (9) is lockable. Consequently, to unlock and remove the tonneau cover (1) to expose the bed and its contents, the tailgate (9) must first be unlocked and opened to reach the catch (43) for the rear rail (31). In another embodiment, the catch (43) is remotely controlled by an electronic actuator (65, 65').

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COMBINATION OF A LOCKABLE, SOFT TONNEAU COVER
AND LOCKABLE TAILGATE

BACKGROUND OF THE INVENTION

5 1. Field of the Invention. This invention relates
to the field of soft, tonneau covers and more
particularly to the field of soft, tonneau covers
for the beds of pickup trucks and similar vehicles.

10 2. Discussion of the Background. Soft, tonneau
covers for pickup trucks and similar vehicles (such
as sport utility ones with exposed beds or decks)
help to cover and protect the beds of the vehicles
and any items in them. Such covers typically are
made of flexible fabric, canvas, or vinyl.
15 Additionally, they commonly have a relatively low
profile (i.e., extend relatively flat across the top
of the bed walls) and can be easily moved to cover
and uncover the bed and its contents. They are also
often easily and conveniently storable on the
vehicle when not in use or easily removed completely
20 from the vehicle for separate storage.

 Currently, such soft covers are normally not
lockable and can be removed by anyone at any time
from over the bed of the vehicle. Some covers like
U.S. Patent No. 5,076,338 to Schmeichel et al.
25 secure the soft cover in place over the bed with

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nominal locking arrangements but do not do so in combination with a lockable tailgate to create true security.

5 With this in mind, the lockable tonneau cover and lockable tailgate combination of the present invention was developed.

SUMMARY OF THE INVENTION

This invention involves a lockable, soft, flexible tonneau cover for the bed of a pickup truck or similar vehicle wherein the lockable tonneau cover is used in combination with a lockable tailgate for increased security. The preferred embodiment includes grooved front, side, and rear rails into which retainer belts on the perimeter of the tonneau cover are insertable to position the cover over the vehicle bed. The front and side rails are respectively attached to the tops of the front and side walls of the bed. The rear rail is mounted to extend and be suspended across the tailgate opening between the side rails.

The mounting for the rear rail includes corner pieces on each side wall of the bed to which the rear rail is pivotally mounted for movement between up and down positions. In the up position, the retainer belt on the rear edge of the untensioned cover can be easily inserted into the groove in the rear rail. Thereafter, the rear rail can be manually rotated or pushed down to its closed position to tension or tighten the cover and move it completely over the vehicle bed. A catch is provided to selectively lock the rear rail in place and keep the rear rail and attached cover in the locked, down position over the bed.

The catch for the rear rail is only accessible through the rear, tailgate opening and the combination of the present invention also includes a

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tailgate that is lockable. Consequently, to unlock
and remove the tonneau cover to expose the bed and
its contents, the tailgate must first be unlocked
and opened to provide access to the catch for the
5 rear rail. In this manner, increased security is
provided by the combination of the lockable tonneau
cover and lockable tailgate of the present
invention.

10 In another embodiment, the lock for the rear
rail is remotely controlled by an electronic
actuator in an equally secure manner.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the combination of the present invention of a lockable, soft tonneau cover and lockable tailgate. The soft, tonneau cover in Figure 1 is shown in use covering the bed of a pickup truck.

Figure 2 is a view similar to Figure 1 with the soft, tonneau cover removed and the tailgate in its closed position.

Figure 3 shows the soft, tonneau cover of the present invention in its down, locked position covering the bed and the tailgate in its open position.

Figure 4 is a view taken along line 4-4 of Figures 1 and 3 illustrating how the cover can be attached to the side rails on the side walls of the vehicle bed.

Figure 5 is a view taken along line 5-5 of Figures 1 and 3 illustrating how the cover can be attached to the front rail on the front wall of the vehicle bed.

Figure 6 is a perspective view of one of the corner pieces to which the rear rail and cover are pivotally mounted.

Figure 7 is a top plan view of Figure 6 further illustrating how the rear rail is pivotally mounted to each corner piece.

Figure 8 is a cross-sectional view taken along line 8-8 of Figure 1 and generally along line 8-8 of Figures 6 and 7 showing the rear rail and cover in

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their closed or down position. Figure 8 also shows the tailgate in dotted lines in its closed position.

Figure 9 is a view similar to Figure 8 illustrating the rear rail and cover in their up or open position. Figure 9 also illustrates the tailgate being moved to an open position.

Figure 10 is a cross-sectional view similar to Figure 8 showing a modified locking arrangement for the rear rail and attached cover in which the catch for the rear rail is spring-biased toward its locking position.

Figure 11 illustrates how the downward movement of the rear rail and attached flipper member toward the closed, locked position can be used to cam the catch of the locking arrangement out of the way to let the flipper member pass by it to the position of Figure 10.

Figure 12 is a view similar to Figure 10 illustrating a modified locking arrangement in which the catch is electronically controlled by a solenoid remotely actuated from the vehicle cabin or from a portable actuator.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows the soft, flexible tonneau cover 1 of the present invention in the closed or down and locked position over the bed of the vehicle 3 (e.g., pickup truck). The bed as best seen in Figure 2 is formed and defined by front wall 5, side walls 7, and the tailgate 9 in the closed position of Figure 2. The tailgate 9 is shown as being mounted for pivotal movement about horizontal axis 11 in Figure 3 but could also be conventionally mounted for pivotal movement about a vertical axis. The tailgate 9 as illustrated can be manually moved between the closed and open positions of Figures 2 and 3. In the open position of Figure 3, rear access to the bed is provided through the tailgate opening 9' between the side walls 7. In the closed position of Figure 2, the tailgate 9, front wall 5, and side walls 7 then form and define an upper opening 1' to the bed of the vehicle 3. The closed tailgate 9 in this regard serves to form the fourth wall of the bed with the front and side walls 5 and 7 forming the other three walls of the bed.

The tonneau cover 1 of Figure 1 is preferably made of a single, continuous sheet or piece of flexible material (e.g., fabric, canvas, or vinyl) that is slightly elastic and stretchable. In use (and in the known manners of co-owned U.S. Patent Nos. 4,757,854; 5,702,147; and 5,765,903), relatively rigid belts 17 as in Figure 4 can be attached (e.g., sewn) to the edges of the

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substantially rectangular cover 1 and removably received or attached in grooves or channels like 19 in side rail 21 (see Figure 4). If desired, a P-welt or arrangement of a dowel 23 and C-shaped channel 25 (see Figure 5) could be used as for example with the front rail 27.

The front and side rails 27 and 21 in Figures 2, 4, and 5 are attached or mounted to the tops of the front and side walls 5 and 7 of the vehicle 3. The rails 27 and 21 could also be molded into the walls 5 and 7 if desired. The rear rail 31 as best seen in Figure 3 is mounted to extend and be suspended across the tailgate opening 9' between the two side walls 7. The mounting for the rear rail 31 includes corner pieces 33 (see Figure 3) on each side of the bed to which the rear rail 31 is pivotally mounted. More specifically as illustrated in Figures 6-8, each end of the rear rail 31 (see Figure 8) is mounted on an end section 35 of a flipper member 37. The flipper member 37 in turn is mounted by pin member 39 to the corner piece 33 (see also Figures 6 and 7) for pivotal movement about the axis 41 relative to the corner piece 33 and the side walls 7. In the down, locked position of Figure 8, the catch 43 is extended to keep the rear rail 31 and attached tonneau cover 1 in this down or closed position fully covering the bed of vehicle 3 as in Figure 1).

In operation as best seen in Figures 8 and 9, the catch 43 is slidably mounted or supported for movement in the channel 45 of each corner piece 33

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between the extended, locking position of Figure 8 and the retracted, non-locking position of Figure 9. The retaining belt 17' on the rear edge of the cover 1 is preferably first inserted into the groove or channel 19' of the rear rail 31 with the rear rail 31 in the first or up position of Figure 9. The belt 17' as best seen in Figure 9 is preferably one with a detent or protuberance 47 receivable in the mating recess 49 of the channel 19' (e.g., in the known manner of co-owned U.S. Patent No. 5,765,903). In this raised position of Figure 9, the rear rail 31 is closer to the front wall 5 than in the down, locked position of Figure 8 and the tonneau cover 1 is somewhat slack and loose. The belt 17' can then be fairly easily manipulated into the channel 19' of the rear rail 31. Thereafter, the rear rail 31 can be manually pivoted downwardly and away from the front wall 5 from the position of Figure 9 to the position of Figure 8. This positions the cover 1 fully over the upper opening to the bed (see Figure 1). It also draws the cover 1 taut and the rear belt 17' and side belts 17 tightly into the respective grooves 19' and 19 in the rear rail 31 and side rails 21 of Figures 4 and 8. In doing so, the cover 1 is slightly stretched both from front-to-rear and side-to-side. Preferably, the residual tension in the stretched cover 1 (both front-to-rear and side-to-side) will make it very difficult if not impossible to remove the belts 17' and 17 from the respective rails 31 and 21.

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In the closed, down position of the rear rail 31 and with the tailgate 9 open as in Figure 3, the handle 51 of the catch 43 can then be manually reached through the tailgate opening 9' and slid rearwardly in the supporting channel 45 (see Figure 8) to the extended, locked position. This keeps the rear rail 31 in the down position of Figure 8 and prevents the rear rail 31 from moving out of the down position of Figure 8 relative to the corner pieces 33 and side walls 7. In doing so, the catch 43 is extended into what would be the normal, pivotal path 53 (see Figure 9) of the end section 55 of the flipper member 37 between the positions of Figures 8 and 9. The flipper end section 55 in this regard and as illustrated is spaced from the pivotal axis 41.

If desired as shown in Figure 10, the catch 43 could be spring-biased at 57 toward the extended, locking position of Figure 10. In this manner, the end section 55 of the flipper member 37 (see Figure 11) could then cam the extended catch 43 out of the way as the end section 55 passes by the extended, biased catch 43. This would occur when the flipper member 37 and attached rear rail 31 were moved from the up position (see Figure 11) to the down position of Figure 10. The same camming action would also occur if the unbiased catch 43 of Figure 9 were inadvertently extended into the predetermined path 53 of the end section 55 when the rear rail 31 was being lowered from Figure 9 to Figure 8.

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When the cover 1 is in the closed position, the catch 43 as illustrated in Figure 3 is only accessible through the tailgate opening 9'. Consequently, when the tailgate 9 is in the up or closed position of Figures 1, 6, and 8, the catch 43 within the vehicle bed beneath the cover 1 cannot be reached and access to the catch 43 is prevented. To then unlock the cover 1 to expose the bed and its contents, the tailgate 9 must first be opened as in Figure 3. Since the tailgate 9 is also lockable (e.g., as by key lock 59 for latch 61 in Figure 1), the combination of the lockable cover 1 and lockable tailgate 9 of the present invention serves to offer increased security to the vehicle owner.

In the preferred embodiments and with the rear rail 31 and attached cover 1 in the down and locked position of Figure 8, the closed tailgate 9 (shown in dotted lines in Figure 8) will abut the sealing member 63 on the rear rail 31. The elongated, sealing member 63 could be on either the rear rail 31 or the tailgate 9 but in either case, a substantially watertight seal is created when the tailgate 9 is closed against the rear rail 31. Additionally, as best seen in Figures 1 and 3, the tailgate 9 can be opened and closed without having to undo the cover 1 or move the rear rail 31 from the down and locked position. In this regard, the tonneau cover 1 of the present invention can remain in the down and locked position and does not need to be manipulated in any manner to open the tailgate 9 to provide access through the tailgate opening 9' of

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Figure 3 to the bed and its contents. This is true whether the tailgate 9 is mounted for pivotal movement about a horizontal axis 11 as shown in Figure 3 or mounted for rotation about a vertical axis.

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While several embodiments of the present invention have been shown and described in detail, it is to be understood that various changes and modifications could be made without departing from the scope of the invention. For example, the rear rail 31 is shown and described as being mounted for pivotal or rotational movement about the axis 41 relative to the corner pieces 33 and side walls 7. However, the rear rail 31 could be mounted to slide horizontally relative to the corner pieces 33 if desired to draw the cover 1 taut over the vehicle bed. Further, the catch 43 could also be electronically and/or remotely controlled (e.g., mechanically or electronically) if desired to move between its extended and retracted positions. In this regard, for example, an electronic actuator or switch 65 could be remotely provided in the vehicle cabin 3' as schematically illustrated in Figure 12 to selectively control the solenoid 67 to extend and retract the catch 43. Since the cabin doors 69 in Figure 1 are also lockable at 71 and the solenoid 67 and catch 43 are inaccessible with the tailgate 9 up and locked in the manner of Figure 8, this remotely controlled arrangement from the cabin 3' provides an equally secure system. The solenoid 67 in Figure 12 could also be remotely controlled by radio or other

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electromagnetic waves received by the antenna 66 from a generating source such as actuator 65' that was, for example, in the cabin 3' or part of a handheld, portable unit carried by the vehicle owner. In the preferred embodiments including the remotely controlled ones, the tension in the stretched and closed cover 1 will cause the rear rail 31 and attached cover 1 to conveniently pop up toward its open position when the catch 43 is released. The portable actuator 65' (e.g., radio frequency) could also remotely control the locks 59 and 71 for the tailgate 9 and vehicle doors 69 if desired.

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I CLAIM:

1. A combination of a lockable, soft, flexible tonneau cover for a bed of a vehicle and a lockable tailgate wherein:

5 said bed of said vehicle has a front wall and two side walls forming three walls of the bed with said tailgate forming a fourth wall of the bed, said tailgate being pivotally mounted for movement about an axis between open and closed positions, said tailgate in said open position providing rear access
10 to the bed through a tailgate opening extending between and defined in part by said side walls, said tailgate in said closed position forming the fourth wall of the bed and preventing rear access to the bed through said tailgate opening, said tailgate
15 having means for selectively locking said tailgate in said closed position, said tailgate in said closed position defining with said front and side walls an upper opening to the bed of the vehicle, and,

20 means for positioning said soft, flexible tonneau cover in a closed position to cover said upper opening to the bed of the vehicle and prevent access through said upper opening, means for selectively locking said tonneau cover in said
25 closed position over said bed, and means for preventing access to said locking means of said tonneau cover when said tonneau cover and said tailgate are respectively in said closed positions.

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2. The combination of claim 1 wherein said locking means for said tonneau cover is positioned within the bed of said vehicle wherein the locking means for said tailgate must be unlocked and the tailgate moved to said open position to provide access to the locking means for said tonneau cover.

3. The combination of claim 2 wherein the locking means for the tonneau cover is positioned beneath said tonneau cover when said tonneau cover is in said closed position.

4. The combination of claim 1 further including a rear rail, means for mounting said rear rail to extend substantially between said two side walls of the bed, and means for attaching said tonneau cover to said rear rail, said rear rail being mounted for movement relative to said two side walls toward and away from said front wall between at least first and second positions, said rear rail in said second position being farther away from the front wall than in said first position, said rear rail in said second position extending substantially horizontally between the two side walls across the tailgate opening, said tonneau cover being in said closed position when said attached rear rail is moved to said second position.

5. The combination of claim 4 wherein said locking means for said tonneau cover includes means

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for selectively keeping said rear rail in said second position.

5 6. The combination of claim 5 wherein said keeping means includes a catch and means for selectively supporting said catch to prevent said rear rail from moving from said second position to said first position.

5 7. The combination of claim 6 wherein said catch is supported for sliding movement between respective positions preventing and permitting said rear rail to be moved from said second position to said first position.

8. The combination of claim 7 further including means for biasing said catch toward said preventing position.

5 9. The combination of claim 5 wherein said mounting means for said rear rail mounts said rear rail for pivotal movement about an axis between said first and second positions, said mounting means having an end section spaced from said pivotal axis, said end section moving along a predetermined path about the pivotal axis as said rear rail is pivotally moved between said first and second positions, said means for selectively keeping said rear rail in said second position including a catch selectively movable into and away from said predetermined path to prevent said rear rail from

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being moved from said second position to said first position.

10. The combination of claim 9 wherein said pivotal axis is substantially horizontal.

11. The combination of claim 4 wherein said tonneau cover is removably attached to said rear rail.

12. The combination of claim 11 wherein said tonneau cover is removably attached to said two side walls.

13. The combination of claim 4 wherein said tonneau cover is made of one piece of material extending over said bed between said side walls and between said front wall and said rear rail when said rear rail is in said second position.

14. The combination of claim 4 further including means for allowing said tailgate to be moved between said open and closed positions with said rear rail in said second position and said cover attached thereto.

15. The combination of claim 4 wherein said locking means for said rear rail releasably locks said rear rail in said second position to at least one of said side walls.

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16. The combination of claim 4 wherein at least one of said rear rail and said tailgate includes a sealing member and the other of said rear rail and said tailgate abuts said sealing member when said rear rail is in said second position and said tailgate is in said closed position.

17. The combination of claim 16 wherein said rear rail includes said sealing member.

18. The combination of claim 1 wherein said means for positioning said cover in said closed position to cover said upper opening to the bed of the vehicle and prevent access through said upper opening includes rails and means for attaching said rails respectively atop said front and two side walls and means for removably attaching said cover to said rails attached atop said front and two side walls.

19. The combination of claim 1 wherein said tonneau cover is made of slightly elastic and stretchable material.

20. A combination of a lockable, soft, flexible tonneau cover for a bed of a vehicle and a lockable tailgate wherein:

said bed of said vehicle has a front wall and two side walls forming three walls of the bed with said tailgate forming a fourth wall of the bed, said tailgate being pivotally mounted for movement about

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an axis between open and closed positions, said tailgate in said open position providing rear access to the bed through a tailgate opening extending between and defined in part by said side walls, said tailgate in said closed position forming the fourth wall of the bed and preventing rear access to the bed through said tailgate opening, said tailgate having means for selectively locking said tailgate in said closed position, said tailgate in said closed position defining with said front and side walls an upper opening to the bed of the vehicle, and,

means for positioning said soft, flexible tonneau cover in a closed position to cover said upper opening to the bed of the vehicle and prevent access through said upper opening, means for selectively locking said tonneau cover in said closed position over said bed, and means for remotely controlling the locking means for said tonneau cover.

21. The combination of claim 20 wherein said vehicle has a cabin and said means for remotely controlling the locking means for said tonneau cover includes an actuator positioned in said cabin.

22. The combination of claim 21 wherein said actuator is electronic.

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23. The combination of claim 22 wherein the means for remotely controlling the locking means for said tonneau cover further includes a solenoid.

24. The combination of claim 20 further including a rear rail, means for mounting said rear rail to extend substantially between said two side walls of the bed, and means for attaching said tonneau cover to said rear rail, said rear rail being mounted for movement relative to said two side walls toward and away from said front wall between at least first and second positions, said rear rail in said second position being farther away from the front wall than in said first position, said rear rail in said second position extending substantially horizontally between the two side walls across the tailgate opening, said tonneau cover being in said closed position when said attached rear rail is moved to said second position, and

said means for remotely controlling the locking means for said tonneau cover includes means for selectively preventing said rear rail from moving from said second position to said first position.

25. The combination of claim 24 wherein said vehicle has a cabin and said means for remotely controlling the locking means for said tonneau cover includes an actuator positioned in said cabin.

26. The combination of claim 20 wherein said means for remotely controlling the locking means for

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said tonneau cover includes an electromagnetic wave actuator.

27. An arrangement including a lockable, soft, flexible tonneau cover for a bed of a vehicle having at least a front wall and two side walls forming three walls of the bed, means for positioning said soft, flexible tonneau cover in a closed position to cover the bed of the vehicle, and means for selectively locking said tonneau cover in said closed position over said bed,

said positioning means for said tonneau cover including a rear rail, means for mounting said rear rail to extend substantially between said two side walls of the bed, and means for attaching said tonneau cover to said rear rail, said rear rail being mounted for movement relative to said two side walls toward and away from said front wall between at least first and second positions, said rear rail in said second position being farther away from the front wall than in said first position, said rear rail in said second position extending substantially horizontally between the two side walls, said tonneau cover being in said closed position when said attached rear rail is moved to said second position, and

said locking means for said tonneau cover including means for selectively keeping said rear rail in said second position wherein said mounting means for said rear rail mounts said rear rail for pivotal movement about an axis between said first

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and second positions, said mounting means having an
30 end section spaced from said pivotal axis, said end
section moving along a predetermined path about the
pivotal axis as said rear rail is pivotally moved
between said first and second positions, said means
for selectively keeping said rear rail in said
35 second position including a catch selectively
movable into and away from said predetermined path
to selectively prevent and permit said rear rail to
be moved from said second position to said first
position.

28. The arrangement of claim 27 wherein said
rear rail is mounted for pivotal movement about a
substantially horizontal axis between said first and
second positions.

29. The arrangement of claim 27 wherein said
catch is supported for sliding movement between
respective positions preventing and permitting said
rear rail to be moved from said second position to
5 said first position.

30. The arrangement of claim 29 further
including means for biasing said catch toward said
preventing position.

31. The arrangement of claim 27 wherein said
tonneau cover is removably attached to said rear
rail.

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32. The arrangement of claim 27 wherein said tonneau cover is removably attached to said two side walls.

33. The arrangement of claim 27 wherein said means for positioning said cover in said closed position to cover the bed of the vehicle includes rails and means for attaching said rails respectively atop said front and two side walls and means for removably attaching said cover to said rails attached atop said front and two side walls.

34. The arrangement of claim 27 wherein said tonneau cover is made of slightly elastic and stretchable material.

35. The arrangement of claim 27 wherein said tonneau cover is made of one piece of material extending over said bed between said side walls and between said front wall and said rear rail when said rear rail is in said second position.

36. The system of claim 27 wherein said locking means for said rear rail releasably locks said rear rail in said second position to at least one of said side walls.

37. An arrangement including a lockable, soft, flexible tonneau cover for a bed of a vehicle, means for positioning said soft, flexible tonneau cover in a closed position to cover the bed of the vehicle,

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5 means for selectively locking said tonneau cover in said closed position over said bed, and means for remotely controlling the locking means for said tonneau cover.

38. The arrangement of claim 37 wherein said vehicle has a cabin and said means for remotely controlling the locking means for said tonneau cover includes an actuator positioned in said cabin.

39. The arrangement of claim 37 wherein said actuator is electronic.

40. The arrangement of claim 37 wherein the means for remotely controlling the locking means for said tonneau cover further includes a solenoid.

41. The combination of claim 37 further including a rear rail, means for mounting said rear rail to extend substantially between said two side walls of the bed, and means for attaching said tonneau cover to said rear rail, said rear rail being mounted for movement relative to said two side walls toward and away from said front wall between at least first and second positions, said rear rail in said second position being farther away from the front wall than in said first position, said rear rail in said second position extending substantially horizontally between the two side walls, said tonneau cover being in said closed position when

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15 said attached rear rail is moved to said second position, and

said means for remotely controlling the locking means for said tonneau cover includes means for selectively preventing said rear rail from moving from said second position to said first position.

42. The combination of claim 41 wherein said vehicle has a cabin and said means for remotely controlling the locking means for said tonneau cover includes an actuator positioned in said cabin.

43. The combination of claim 37 wherein said means for remotely controlling the locking means for said tonneau cover includes an electromagnetic wave actuator.

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Fig. 1

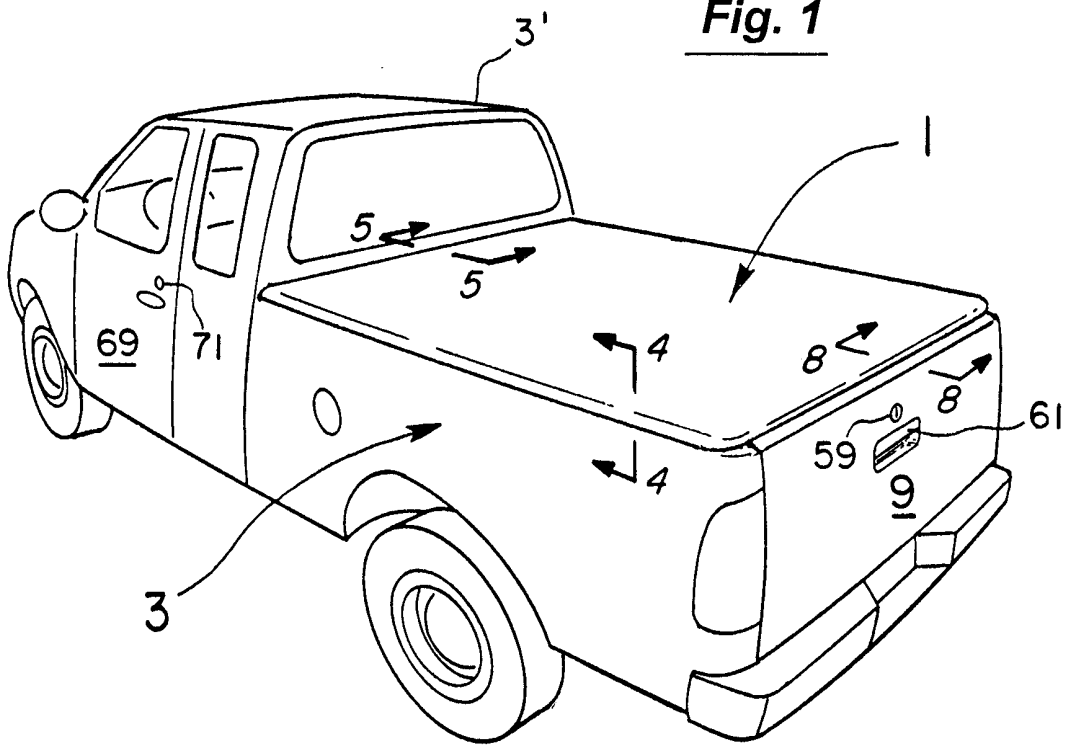


Fig. 2

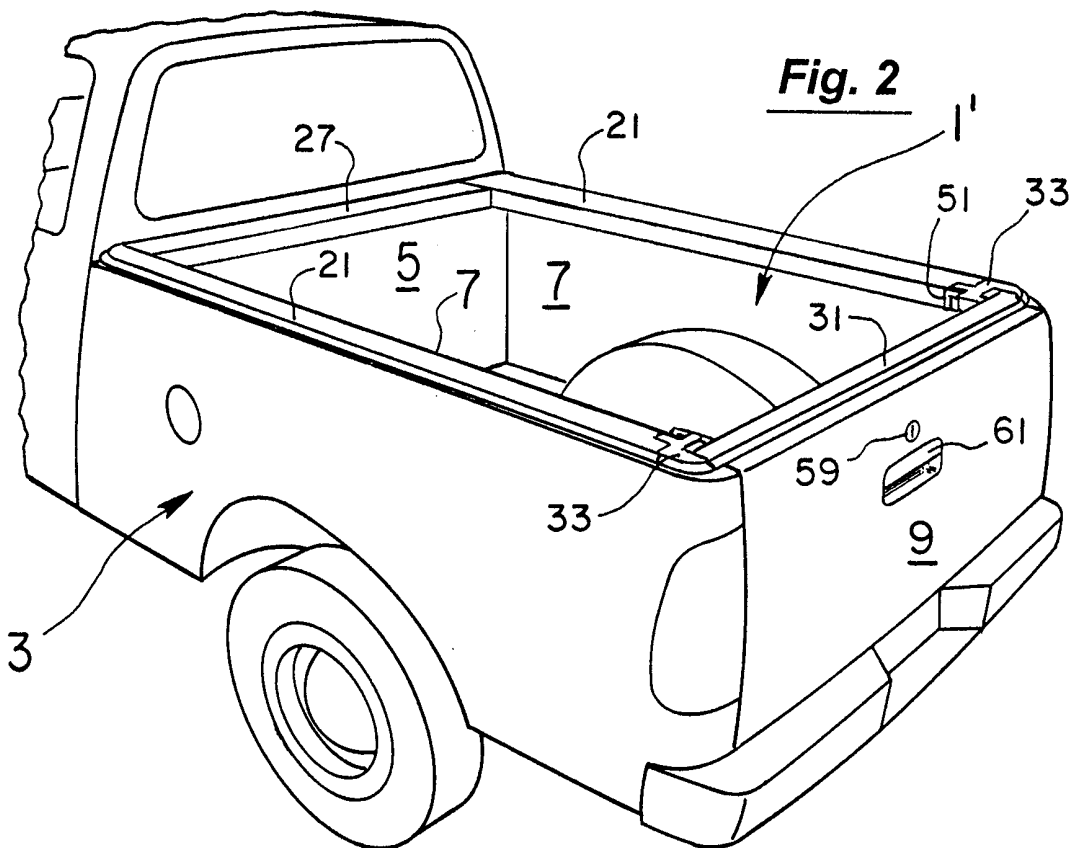


Fig. 3

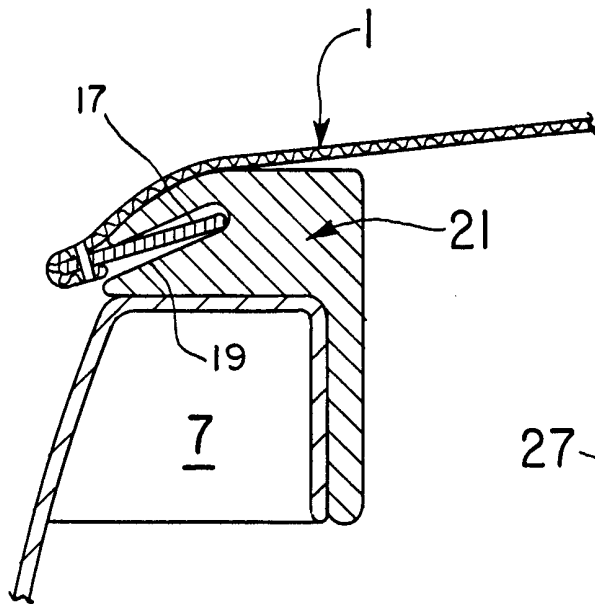
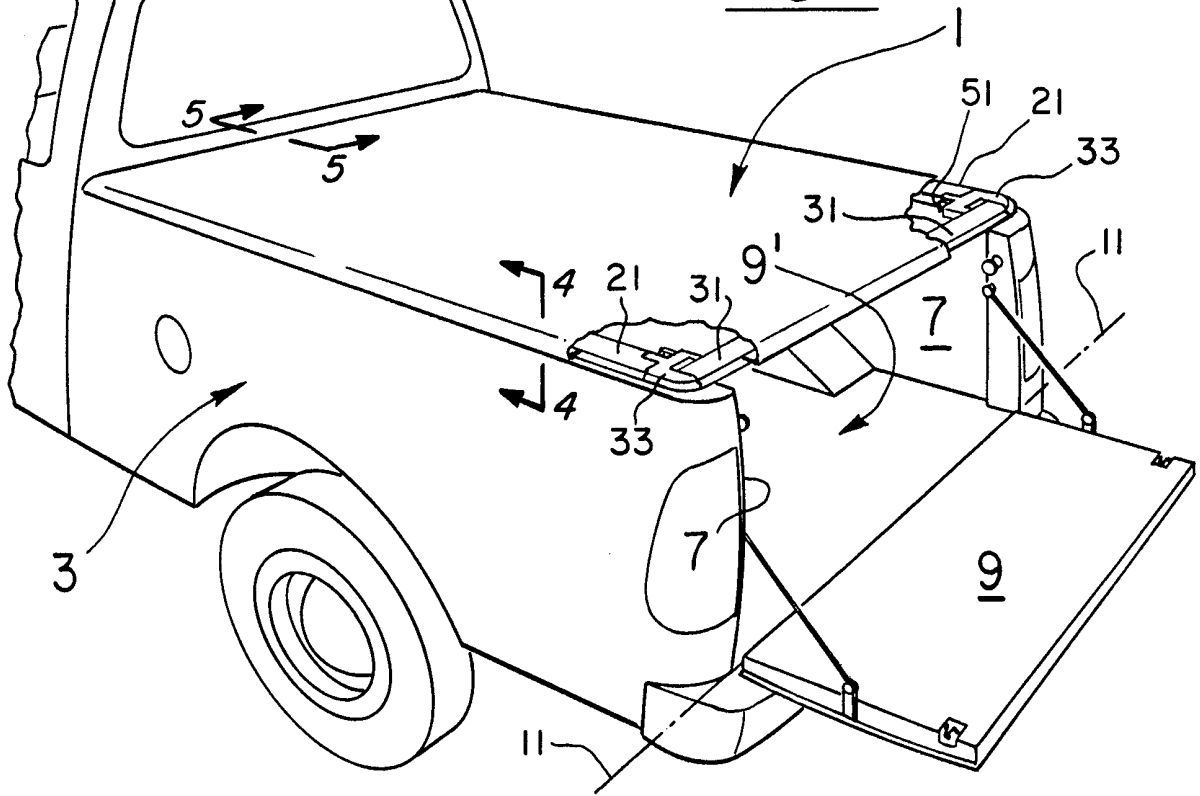
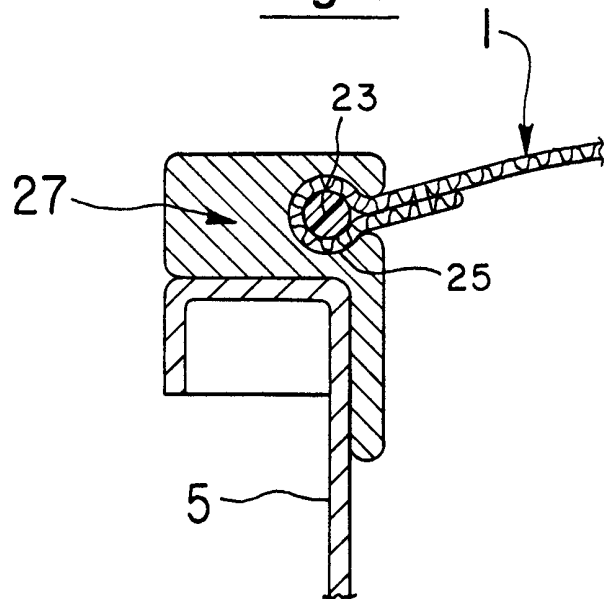


Fig. 4

Fig. 5



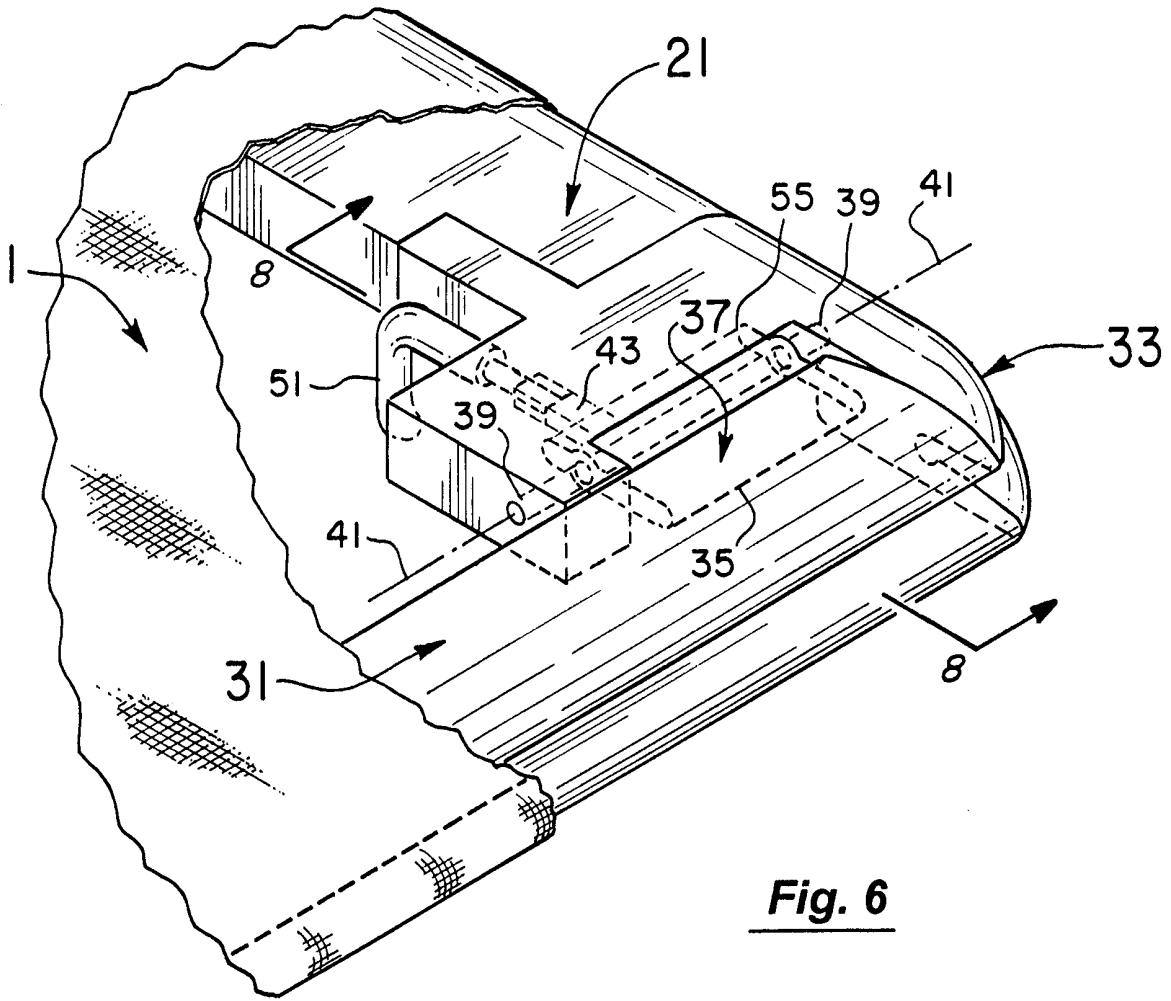


Fig. 6

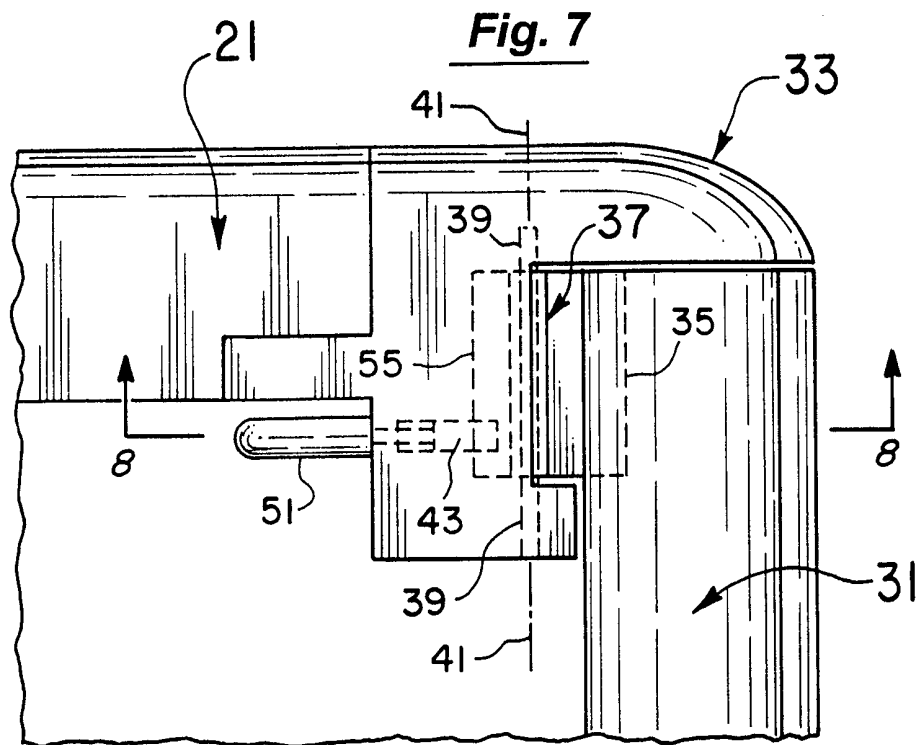


Fig. 7

Fig. 8

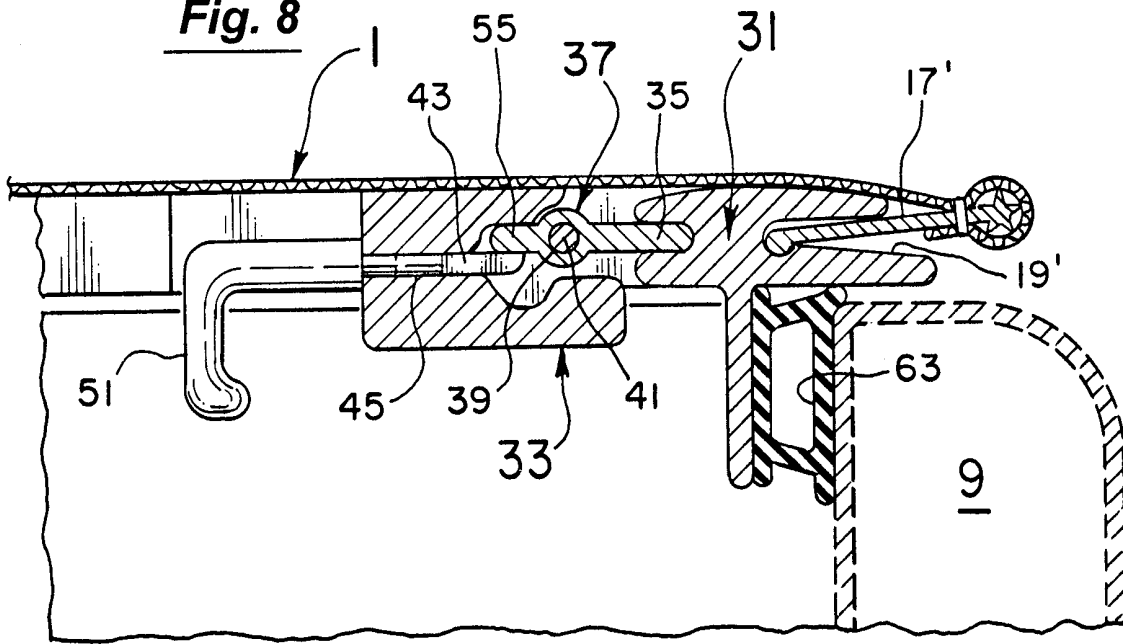
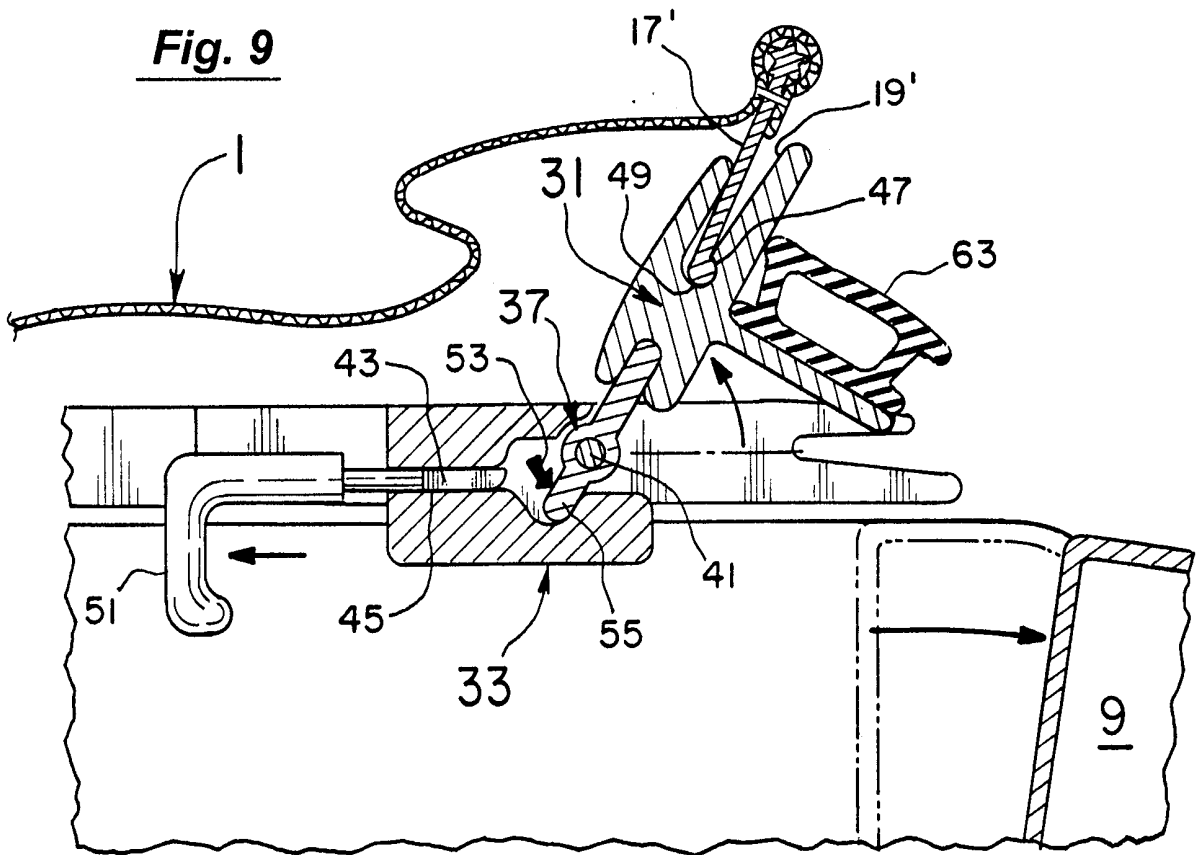
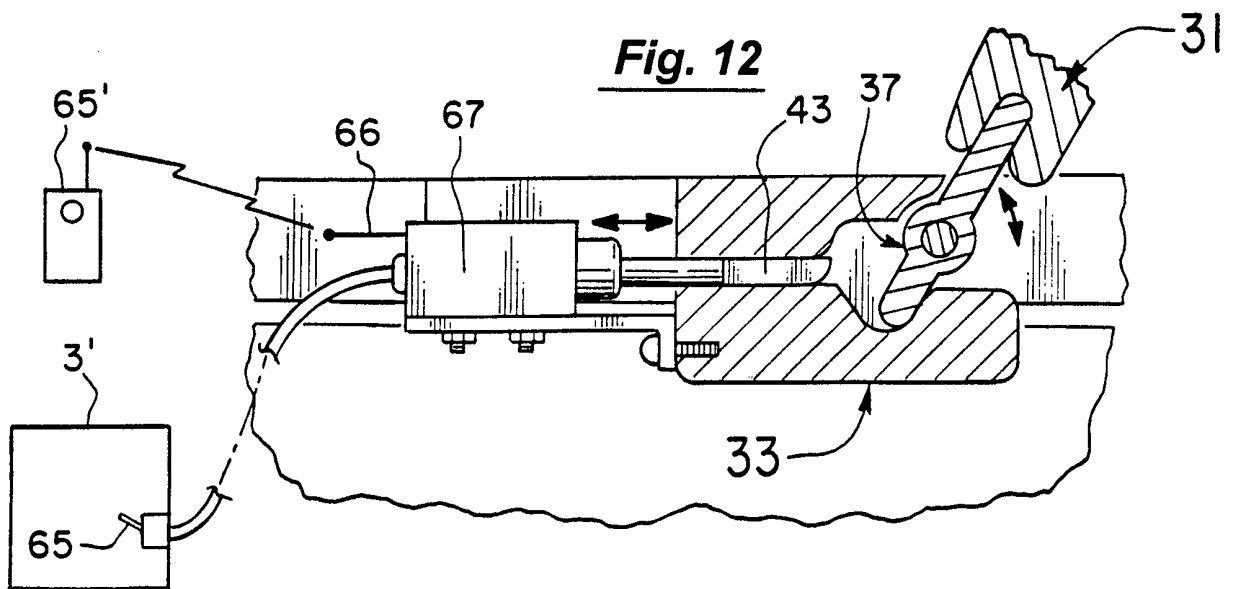
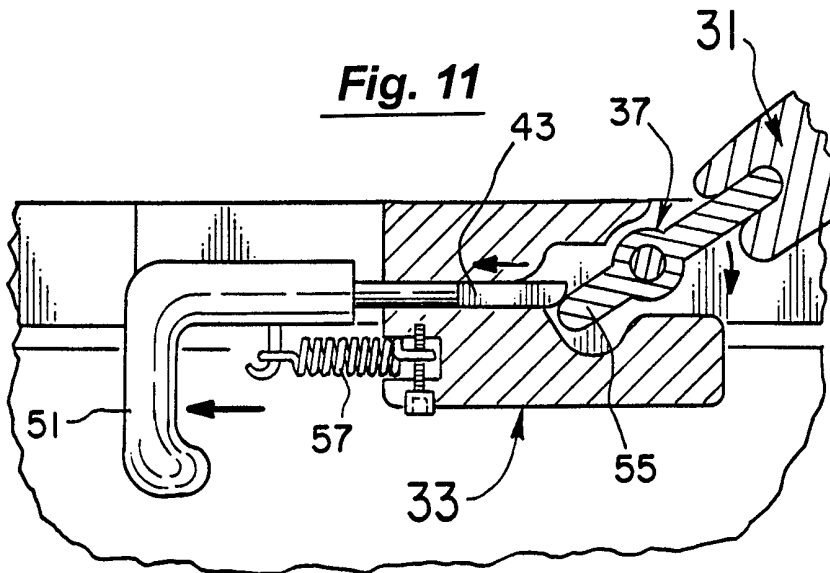
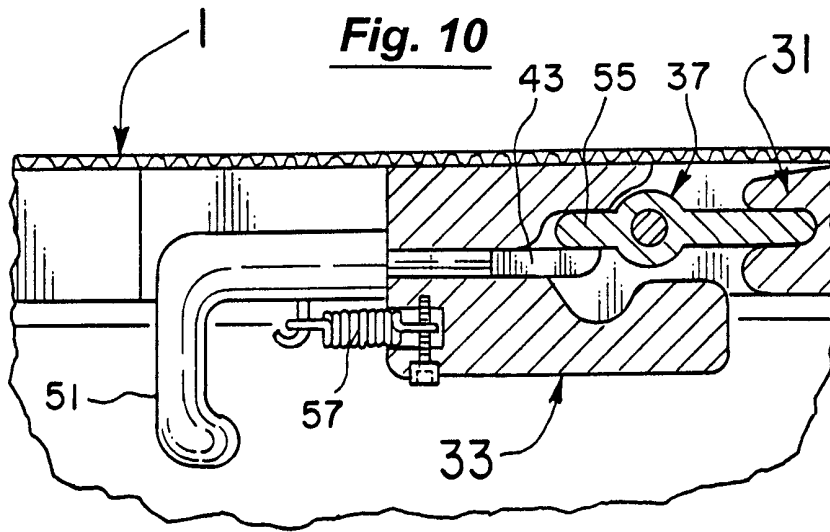


Fig. 9





INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/20821

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : B60P 7/04
US CL : 296/100.15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 296/57.1, 100.15, 100.16, 100.17, 100.18

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

BRS
search terms: (tonneau adj cover) and truck and lock\$4 and tailgate

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
Y	US 4,273,377 A (ALEXANDER) 16 June 1981, (16/06/81), see entire document.	1-8, 13-20, 24, 27, 29, 30, 33-37, 41
Y	US 4,743,058 A (FEDRIGO) 10 May 1988, (10/05/88), col.3, lines 59-68 and col.4, lines 1-6.	1
Y	US 4,757,854 A (RIPPBERGER) 19 July 1988, (19/07/88), see entire document.	11-13, 18, 19, 31-35
Y	US 5,076,338 A (SCHMEICHEL et al.) 31 December 1991, (31/12/91), see entire document.	11-13, 18, 19, 31-35

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
04 DECEMBER 1999

Date of mailing of the international search report

23 DEC 1999

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/20821

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,251,951 A (WHEATLEY) 12 October 1993, (12/10/93), see entire document.	1-6, 9-13, 15-20, 24, 27, 28, 31-37, 41
A, P	US 5,857,729 A (BOGARD) 12 January 1999, (12/01/99), see entire document.	All
Y, E	US 5,984,400 A (MILLER et al.) 16 November 1999, (16/11/99), see entire document.	11-13, 18, 19, 31-35