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DEFOREST, Jason, Commerce, MI 48382 (US)(73) Jogosult(ak):
**Kongsberg Interior Systems II, Inc., Novi,
Michigan (US)**(74) Képviselő:
**Danubia Szabadalmi és Jogi Iroda Kft.,
Budapest**

(54)

Reteszelő mechanizmus lehajtható fejtámlához

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(54) **LOCKOUT MECHANISM FOR FOLDABLE HEAD REST**

SPERRMECHANISMUS FÜR FALTBARE KOPFSTÜTZE

MÉCANISME DE VERROUILLAGE POUR APPUI-TÊTE PLIABLE

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(73) Proprietor: **Kongsberg Automotive Inc.
Novi, MI 48377 (US)**

(72) Inventor: **DEFOREST, Jason
Commerce, MI 48382 (US)**

(74) Representative: **Uexküll & Stolberg
Patentanwälte
Beselerstrasse 4
22607 Hamburg (DE)**

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Description

FIELD OF INVENTION

[0001] The subject invention relates to a vehicle seat having a foldable head rest, to a lockout mechanism and to a method for preventing the head rest from being actuated to a folded position when an occupant is in the vehicle seat.

BACKGROUND OF THE INVENTION

[0002] In many vehicles, a vehicle seat provided in a second row of seats (or a third or additional row) can be folded, and possibly stowed in a compartment in the floor of the vehicle. The vehicle seat typically includes a head rest (or head restraint, which is used interchangeably with "head rest" as provided herein). However, a problem arises that an operator must either manually disengage the head rest, or otherwise move the head rest to a folded position when folding the vehicle seat.

[0003] To address this problem, it is known to couple the head rest to a fold/stow mechanism of the vehicle seat, such that initiation of a folding/stowing operation of the vehicle seat automatically moves the head rest to the folded position. Conventional fold/stow mechanisms typically are designed such that the operator initiates the folding/stowing operation by tilting a back rest of the vehicle seat toward a bottom seat cushion thereof, where tilting of the back rest results in movement of the head rest toward the folded position, for example, by means of an actuation linkage coupling tilting of the back rest to the fold/stow mechanism of the head rest.

[0004] However, an arrangement in which tilting of the back rest of the vehicle seat automatically results in folding/stowing of the head rest is undesirable, at least because during use, the occupant may wish to adjust seat position by tilting the back rest, without causing the seat to be folded. Therefore, if such an adjustment in seat position is made with the occupant in the vehicle seat, it may cause discomfort or a safety hazard, in particular because tilting of the back rest would cause the head rest to move toward the folded position.

[0005] It would be desirable to provide an arrangement in which an occupant may adjust a back rest of a vehicle seat without causing folding of the head rest, while automatically allowing tilting of the back rest to cause displacement of the head rest when the occupant is not present in the vehicle seat.

[0006] In DE 102 16 705 A1 an acceleration sensitive coupling between two cables in a vehicle seat is disclosed. The cables connect a sensor or actuator to a head rest to unlock the head rest in case of activation of the sensor, which head rest is spring biased and brought to an emergency position by the spring bias when unlocked. The coupling between the two cables includes a pivotal interlock member having a substantial inertial mass. The interlock member is spring biased to a position

in which it keeps the two cables mechanically in a decoupled state. In case of a rear end collision the interlock member, because of its inertial mass, is pivoted backward which allows the two cables to come into a coupled state when the first cable is pulled such that pulling of the first cable is transferred to the second cable and the head rest is unlocked.

[0007] EP 1 612 099 A2 discloses a vehicle seat comprising: a bottom seat cushion; a back rest configured to be pivoted relative to the bottom seat cushion; a head rest moveable between an operative position and a folded position in response to pivoting of the back rest.

SUMMARY OF THE INVENTION

[0008] A vehicle seat is provided in a second, third, or additional row of seats in a motor vehicle, the vehicle seat having a head rest that is movable from an operative position to a folded position in response to pivoting of a back rest relative to a bottom seat cushion of the vehicle seat, and which incorporates a lockout mechanism to prevent movement of the head rest between the operative position and the folded position if an occupant is present in the vehicle seat. In particular, a sensor is operably connected to the vehicle seat, in order to determine whether the occupant is present in the vehicle seat, such that if the occupant is present, the lockout mechanism prevents movement of the head rest between the operative position and the folded position in response to movement of the back rest.

[0009] A vehicle seat according to the subject application can include: a bottom seat cushion; a back rest configured to be pivoted relative to the bottom seat cushion; a head rest movable between an operative position and a folded position in response to pivoting of the back rest; a sensor configured to determine whether or not an occupant is present in the vehicle seat; and a lockout mechanism operably connected to the vehicle seat, the lockout mechanism configured to prevent movement of the head rest between the operative position and the folded position if the sensor indicates that the occupant is present in the vehicle seat.

[0010] The lockout mechanism can include: a housing with a first space and a second space; a plunger slidably disposed in the first space, the plunger being operably connected to a cable which is adapted to transfer movement from the back rest to the head rest; and a lockout pin movably disposed in the second space, the lockout pin being adapted to be moved in response to input from a sensor indicating whether or not an occupant is present in the vehicle seat.

[0011] A method for preventing movement of a head rest to a folded position when an occupant is present in a vehicle seat, according to the subject invention, can include steps of: providing the vehicle seat including a bottom seat cushion, a back rest configured to be pivoted relative to the bottom seat cushion, and a head rest movable between an operative position and the folded position

tion in response to pivoting of the back rest; receiving a signal from a sensor to determine whether or not the occupant is present in the vehicle seat; and providing a lockout mechanism such that if the signal indicates that the occupant is present in the vehicle seat, the lockout mechanism prevents movement of the head rest between the operative position and the folded position.

[0012] Other aspects and embodiments of the invention are discussed below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] For a fuller understanding of the nature and desired objects of the subject invention, reference is made to the following detailed description taken in conjunction with the accompanying drawing figures wherein like reference character denote corresponding parts throughout the several views and wherein:

FIG. 1 is a front perspective view of a vehicle seat according to the subject invention;

FIG. 2 is an enlarged front perspective view of a head rest connected to the vehicle seat;

FIG. 3 is a perspective view of a mechanism for tilting a back rest of the vehicle seat, in order to actuate folding of the vehicle seat;

FIG. 4 is an enlarged perspective view of the mechanism for tilting the back rest of the vehicle seat;

FIG. 5 is a side perspective view of a bottom seat cushion of the vehicle seat incorporating an occupant sensor;

FIG. 6 is a cross-sectional view of a lockout mechanism of the vehicle seat;

FIGS. 7A-7B are a side view and an exploded parts view, respectively, of the lockout mechanism of FIG. 6;

FIG. 8 is a side perspective view of the vehicle seat with the head rest in a first folded position;

FIG. 9 is a side perspective view of the vehicle seat with the head rest in a second folded position, and the back rest tilted forward; and

FIG. 10 is a side perspective view of the vehicle seat in a folded position.

DEFINITIONS

[0014] The instant invention is most clearly understood with reference to the following definitions:

[0015] As used herein, the term "vehicle" refers to any type of vehicle, including but not limited to motor vehicles such as cars, trucks, vans, minivans, sport utility vehicles (SUVs), crossover-type vehicles, and other types of vehicles, and further may encompass non-motor vehicles.

[0016] The terms "head rest" and "head restraint" are used interchangeably herein, where a head rest (or head restraint) typically is arranged adjacent to a back rest of a vehicle seat, and can provide comfort and/or safety functions.

DETAILED DESCRIPTION OF THE INVENTION

[0017] A vehicle seat is provided in a second, third, or additional row in a motor vehicle, the vehicle seat configured to be folded and/or stowed by pivoting a back rest relative to a bottom seat cushion of the vehicle seat, which pivoting movement causes a head rest of the vehicle seat to move between an operative position and a folded position, and which incorporates a sensor to determine whether an occupant is present in the vehicle seat, and a lockout mechanism that prevents movement of the head rest between the operative position and the folded position if the sensor indicates that the occupant is present in the vehicle seat. Also provided is the lockout mechanism itself, which preferably includes a housing with a first space and a second space, a plunger slidably disposed in the first space and operably connected to a cable that transfers movement from the back rest to the head rest, and a lockout pin movably disposed in the second space and which is movable in response to input from the sensor indicating whether or not the occupant is present in the vehicle seat. Further provided is a method for preventing movement of the head rest to the folded position when the occupant is present in the vehicle seat by use of the lockout mechanism, and where if the lockout mechanism receives a signal from the sensor indicating that the occupant is not present in the vehicle seat, then movement of the back rest does not result in movement of the head rest to the folded position.

[0018] Referring to FIG. 1, a vehicle seat 10 is depicted, the vehicle seat 10 preferably being provided in a second, third, or additional row of seating in a motor vehicle, and which is configured to be folded and/or stowed in a floor (or another location) in the motor vehicle. The vehicle seat 10 includes at least a back rest 12, a bottom seat cushion 14, and a head rest assembly 16, where certain details of these components have been omitted for convenience. As described below, the head rest assembly 16 can incorporate a head rest (also referred to as a "head restraint").

[0019] The back rest 12 includes a frame 13a and at least one cross member 13b, and preferably is connected to the bottom seat cushion 14. A folding mechanism 18 is provided to enable tilting of the back rest 12 relative to the bottom seat cushion 14, the folding mechanism 18 also being used to initiate folding of the vehicle seat 10 in order to fold and/or stow the vehicle seat. Further details of the folding mechanism 18 are discussed below with reference to FIGS. 3-4. The head rest assembly 16 is structurally and operably connected to the back rest 12, as shown in FIGS. 1-2.

[0020] As shown in the enlarged view of FIG. 2, the head rest assembly 16 includes a head rest 20 mounted to posts 22 and 24, which are configured to be adjusted within an internal frame 26. In particular, the posts 22 and 24 can be adjusted vertically, and are configured to be folded according to an operation described below. The internal frame 26 of the head rest assembly 16 is con-

nected to the back rest 12.

[0021] Referring to FIGS. 3 and 4, the folding mechanism 18 includes a handle 28 that is manually actuated by an occupant of the vehicle seat, in a known manner, in order enable tilting of the back rest 12 relative to the bottom seat cushion 14. In particular, by pulling the handle 28, the occupant can make desired adjustments in the position of the back rest 12, in order to tilt the vehicle seat forward or backward. If the vehicle seat is tilted forward without the occupant being present in the vehicle seat, it can trigger movement of the head rest assembly 16 toward a folded position, as described in greater detail below, in order to fold the vehicle seat. As shown in FIGS. 3-4, the handle 28 is operably connected to a pulley 30 connected to a cable 32 that transfers movement of the back rest 12 to the head rest assembly 16, as described herein. The cable 32 preferably is received within a conduit 34, the conduit 34 having a first end connected to the pulley 30 and a second end connected to the lockout mechanism, as described below.

[0022] FIG. 5 depicts the bottom seat cushion 14 having a sensor 40 including a seat cushion input cable 42 received in a seat cushion input conduit 44, the sensor 40 signaling to the lockout mechanism whether or not an occupant is present in the vehicle seat. In particular, the seat cushion input cable 42 (of the sensor 40) has a first end connected to the vehicle seat, and a second end connected to a lockout mechanism (specifically, a lockout pin 74, as described later). The conduit 44 has a first end connected to the sensor 40 and a second end connected to a housing 52, as described below.

[0023] As depicted in FIG. 5, the sensor 40 preferably is a mechanical sensor in which the occupant, if present in the vehicle seat, produces a downward force against the bottom seat cushion 14 due to the occupant's weight, which causes the seat cushion input cable 42 of the sensor 40 to be pulled in a direction away from the lockout mechanism, thereby resulting in retraction of the lockout pin 74 and preventing actuation of the head rest assembly 16 to a folded position, as described below. The sensor 40 is exemplary of a mechanical or electro-mechanical sensor that can be used to sense whether the occupant is present in vehicle seat, but various alternatives may be used. For example, the sensor 40 can be replaced by a switching arrangement in which a switch is opened or closed in an electronic circuit in response to the occupant's weight, the switch being operably connected to the lockout mechanism. Other suitable sensors include electronic sensors that communicate an electrical signal to the lockout mechanism, and in which a controller preferably includes programmable logic for controlling folding of the head rest.

[0024] A lockout mechanism 50 according to the subject invention is depicted in FIGS. 6 and 7A-7B. The lockout mechanism 50 is operably connected to at least the following inputs: (1) the cable 32 that transfers movement of the back rest 12 to the head rest assembly 16 (where the cable 32 is shown without the conduit 34 in FIG. 6

for convenience); and (2) the seat cushion input cable 42 contained in the seat cushion input conduit 44 that transfers a signal of the sensor 40 indicating whether or not an occupant is present in the vehicle seat (i.e., the bottom seat cushion 14). The lockout mechanism 50 has an output of the cable 32, which transfers movement of the back rest 12 to the head rest assembly 16. In other words, the cable 32 preferably passes directly through the lockout mechanism 50, and thus serves as both an input and an output to the lockout mechanism. Alternatively, it is possible to replace the cable 32 with two separate cables, i.e., one cable being connected to the back rest 12, and another cable being connected to the head rest assembly 16, where in such an embodiment, the cables may be interconnected within the lockout mechanism.

[0025] The lockout mechanism 50 according to the subject invention preferably includes a housing 52 with a first space 54 and a second space 56, the first space 54 receiving the cable 32, and the second space 56 receiving the seat cushion input cable 42. The first and second spaces 54, 56 are arranged so as to intersect, and may be provided at a suitable angle, such as 90°, relative to each other. Preferably the first and second spaces 54, 56 are arranged in a perpendicular manner, as shown in FIGS. 6 and 7A-7B.

[0026] Referring to FIGS. 6 and 7A-7B, a plunger 60 is attached to a head rest conduit 36, which has a first end connected to the plunger 60, and a second end connected to the head rest assembly 16 (see FIG. 1). The head rest conduit 36 receives the cable 32 for transferring movement of the back rest 12 to the head rest assembly 16 in the operative position of the head rest assembly 16.

[0027] The plunger 60 is configured to be received within the first space 54 of the housing 52. In particular, the plunger 60 has an outside diameter 62 that is smaller than a diameter of the first space 54 such that the plunger 60 is slidable in the first space 54. A compression spring 66 is connected to one end of the plunger 60 so as to bias the plunger 60 in the direction of the head rest assembly 16. The plunger 60 preferably includes a recess 64 having a smaller diameter than the outside diameter 62 of the plunger 60, the recess 64 configured to be engaged by a lockout pin, as described below.

[0028] In the second space 56 of the housing 52, the seat cushion input cable 42 is received, so as to transfer a signal from the sensor 40 arranged with respect to the bottom seat cushion 14, and thus indicate whether or not an occupant is present in the vehicle seat. To facilitate connection of the seat cushion input cable 42 to the second space 56, the seat cushion input conduit 44 that surrounds the seat cushion input cable 42 is connected to the housing 52 by a collar 72. A lockout pin 74 preferably is spring biased away from the collar 72 and toward the intersection with the first space 54 by a compression spring 76. In particular, the lockout pin 74 is configured to engage the recess 64 of the plunger 60, allowing actuation of the head rest 20, known as an "operative po-

sition" of the head rest assembly 16. In the operative position, the head rest 20 is configured to be folded in response to actuation of the back rest 12, when there is no occupant in the vehicle seat. When the lockout pin 74 is disengaged from the plunger 60, the cable 32 does not move through the conduit 36, but instead the plunger 60 will move within the housing 52.

[0029] In operation, the lockout mechanism 50 functions as follows. As described above, the lockout pin 74 is spring biased toward the recess 64 of the plunger 60, which corresponds to the operative position of the head rest assembly 16 (see FIG. 6). When the lockout pin 74 is engaged with the recess 64 of the plunger 60 and no occupant is present in the vehicle seat, then movement of the back rest 12 is transferred to the head rest assembly 16 via the cable 32, and the head rest 20 can be moved to a folded position.

[0030] When an occupant is present in the vehicle seat, the occupant exerts a downward force on the bottom seat cushion 14, which causes the sensor 40 to send a signal via the seat cushion input cable 42 (in this case, there is a mechanical pull on the lockout pin 74). The signal is transmitted via the seat cushion input cable 42, which results in a pull of the seat cushion input cable 42 of sufficient force to overcome the bias of the compression spring 76, thereby pulling the lockout pin 74 out of engagement with the recess 64 of the plunger 60. As a result, the plunger 60 connected to the conduit 36 is free to move within the first space 54. Consequently, when there is a pull on the cable 32 due to displacement of the back rest 12, instead of causing movement of the head rest assembly 16, it will merely result in displacement of the plunger 60 within the housing 52 (i.e., the conduit 36 is slacked within the housing 52), without causing actuation of the head rest assembly 16. In other words, instead of movement of the back rest 12 being transferred to the head rest assembly 16 via the cable 32, the plunger 60 attached to the conduit 36 surrounding the cable 32 will simply move inside the lockout mechanism 50.

[0031] A method for preventing movement of a head rest to a folded position when an occupant is present in a vehicle seat can include steps of: providing the vehicle seat including a bottom seat cushion, a back rest configured to be pivoted relative to the bottom seat cushion, and a head rest movable between an operative position and the folded position in response to pivoting of the back rest; receiving a signal from a sensor to determine whether or not the occupant is present in the vehicle seat; and providing a lockout mechanism such that if the signal indicates that the occupant is present in the vehicle seat, the lockout mechanism prevents movement of the head rest between the operative position and the folded position. Further, if the signal indicates that the occupant is not present in the vehicle seat, the head rest is permitted to move between the operative position and the folded position. Additionally, the lockout mechanism can include a housing with a first space and a second space, the first space receiving a plunger slidably disposed in the first

space, and the second space receiving a lockout pin configured to engage the plunger to prevent movement of the head rest in response to movement of the back rest.

[0032] FIGS. 8-10 depict three stages of folding of the vehicle seat. In particular, when the sensor 40 indicates that the occupant is not present in the vehicle seat, then the head rest assembly 16 is configured to be folded in response to movement of the back rest 12. In such a case, the head rest assembly 16 is in the operative position, and movement of the back rest 12 causes the head rest 20 of the head rest assembly 16 to move sequentially from a first folded position (see FIG. 8) in which the head rest 20 is approximately perpendicular to the back rest 12 to a second folded position (see FIG. 9) in which the head rest 20 is approximately parallel to the back rest 12, and thus substantially pressed against the back rest 12. Further actuation of the back rest 12 results in folding of the back rest 12 against the bottom seat cushion 14, with the head rest 20 arranged substantially between the back rest 12 and the bottom seat cushion 14 (see FIG. 10). Folding of the back rest 12 and the head rest assembly 16 is not limited to the positions depicted in FIGS. 8-10, which are merely exemplary of a folding operation.

[0033] Although preferred embodiments of the invention have been described using specific terms, such description is for illustrative purposes only, and it is to be understood that changes and variations may be made without departing from the scope of the following claims.

Claims

1. A vehicle seat, comprising:
 - a bottom seat cushion (14);
 - a back rest (12) configured to be pivoted relative to the bottom seat cushion;
 - a head rest (20) movable between an operative position and a folded position in response to pivoting of the back rest (12);
 - a sensor (40) configured to determine whether or not an occupant is present in the vehicle seat; and
 - a lockout mechanism (50) operably connected to the vehicle seat, the lockout mechanism (50) configured to prevent movement of the head rest (20) between the operative position and the folded position if the sensor (40) indicates that the occupant is present in the vehicle seat.
2. The vehicle seat of claim 1, wherein the lockout mechanism (50) comprises a housing (52) with a first space (54) and a second space (56), the first space (54) receiving a plunger (60) slidably disposed in the first space, and the second space (56) receiving a lockout pin (74) configured to engage the plunger (60).

3. The vehicle seat of claim 2, wherein the sensor (40) is connected to the lockout pin (74) such that if the occupant is present in the vehicle seat, the lockout pin (74) disengages from the plunger (60), thereby preventing movement of the head rest (20). 5
4. The vehicle seat of claim 1, wherein if the sensor (40) indicates that the occupant is not present in the vehicle seat, then the head rest (20) is permitted to move between the operative position and the folded position in response to pivoting of the back rest (12). 10
5. The vehicle seat of claim 1, wherein the head rest (20) is connected to the back rest (12) by a cable (32) that transfers movement from the back rest (12) to the head rest (20). 15
6. The vehicle seat of claim 5, wherein the lockout mechanism (50) comprises a housing (52) with a first space (54) and a second space (56), the cable (32) and a plunger (60) being received in the first space (54), and a lockout pin (74) being received in the second space (56). 20
7. The vehicle seat of claim 6, wherein the plunger (60) is slidably disposed in the first space (54), and the lockout pin (74) is movable within the second space (56). 25
8. The vehicle seat of claim 7, wherein the plunger (60) is formed with a recess (64), and the lockout pin (74) engages the recess (64) to prevent movement of the plunger (60). 30
9. The vehicle seat of claim 8, wherein upon engagement of the lockout pin (74) with the plunger (60), a position of the conduit (36) is fixed, and the cable (32) is permitted to move through the conduit (36), thereby allowing actuation of the head rest (20). 35
10. The vehicle seat of claim 7, wherein the lockout pin (74) is movable in response to input from the sensor (40) such that if the occupant is present in the vehicle seat, the lockout pin (74) moves out of engagement with the plunger (60), thereby preventing movement of the head rest (20) to the folded position. 40
11. The vehicle seat of claim 7, wherein the sensor (40) comprises at least a seat cushion input cable (42) having a first end fixed to the vehicle seat and a second end fixed to the lockout pin (74) such that if the occupant is present in the vehicle seat, the sensor (40) causes the lockout pin (74) to move out of engagement with the plunger (60), thereby preventing movement of the head (20) rest to the folded position. 50
12. A lockout mechanism for a vehicle seat having a bottom seat cushion (40), a back rest (12) configured to be pivoted relative to the bottom seat cushion (14), and a head rest (20) movable in response to pivoting of the back rest (12), comprising: 55
- a housing (52) with a first space (54) and a second space (56);
 - a plunger (60) slidably disposed in the first space (54), the plunger (60) being operably connected to a cable (32) which is adapted to transfer movement from the back rest (12) to the head rest (20); and
 - a lockout pin (74) movably disposed in the second space (56), the lockout pin (74) being adapted to be moved in response to input from a sensor (40) indicating whether or not an occupant is present in the vehicle seat.
13. The lockout mechanism of claim 12, wherein upon engagement of the lockout pin (74) with the plunger (60), the head rest (20) is movable between the operative position and the folded position.
14. The lockout mechanism of claim 12, wherein the sensor (40) is connected to the lockout pin (74), the lockout pin (74) being adapted to be moved in response to input from the sensor (40), such that if the occupant is present in the vehicle seat, the lockout pin (74) moves out of engagement with the plunger (60), thereby preventing movement of the head rest (20) in response to movement of the back rest (12).
15. The lockout mechanism of claim 12, wherein upon disengagement of the lockout pin (74) from the plunger (60), the head rest (20) is prevented from moving to a folded position in response to movement of the back rest (12).
16. The lockout mechanism of claim 12, wherein the plunger (60) is formed with a recess (64), and the lockout pin (74) engages the recess (64) to prevent movement of the plunger (60).
17. A method for preventing movement of a head rest (20) to a folded position when an occupant is present in a vehicle seat, comprising the steps of:
- providing the vehicle seat including a bottom seat cushion (14), a back rest (12) configured to be pivoted relative to the bottom seat cushion, and a head rest (20) movable between an operative position and the folded position in response to pivoting of the back rest (12);
 - receiving a signal from a sensor (40) to determine whether or not the occupant is present in the vehicle seat; and
 - providing a lockout mechanism (50) such that if the signal indicates that the occupant is present in the vehicle seat, the lockout mechanism (50)

- prevents movement of the head rest (20) between the operative position and the folded position.
18. The method of claim 17, wherein if the signal indicates that the occupant is not present in the vehicle seat, the head rest (20) is permitted to move between the operative position and the folded position.
19. The method of claim 17, wherein the lockout mechanism (50) comprises a housing (52) with a first space (54) and a second space (56), the first space receiving a plunger (60) slidably disposed in the first space, and the second space (56) receiving a lockout pin (74) configured to engage the plunger (60) to prevent movement of the head rest (20).

Patentansprüche

1. Fahrzeugsitz mit:

einem Sitzflächenpolster (14),
einer Rückenlehne (12), die dazu ausgestaltet ist, um relativ zu dem Sitzflächenpolster geschwenkt zu werden,
einer Kopfstütze (20), die in Reaktion auf ein Schwenken der Rückenlehne (12) zwischen einer Betriebsstellung und einer eingeklappten Stellung beweglich ist,
einem Sensor (40), der dazu ausgestaltet ist, festzustellen, ob sich ein Passagier auf dem Fahrzeugsitz befindet oder nicht, und
einem Sperrmechanismus (50), der funktionsmäßig mit dem Fahrzeugsitz verbunden ist, wobei der Sperrmechanismus (50) dazu ausgestaltet ist, Bewegung der Kopfstütze (20) zwischen Betriebsstellung und eingeklappter Stellung zu verhindern, wenn der Sensor (40) anzeigt, dass der Passagier sich auf dem Fahrzeugsitz befindet.

2. Fahrzeugsitz nach Anspruch 1, wobei der Sperrmechanismus (50) ein Gehäuse (52) mit einem ersten Hohlraum (54) und einem zweiten Hohlraum (56) aufweist, wobei der erste Hohlraum (54) einen gleitfähig in dem ersten Hohlraum angeordneten Kolben (60) aufnimmt und wobei der zweite Hohlraum (56) einen Sperrstift (74) aufnimmt, der dazu ausgestaltet ist, um mit dem Kolben (60) einzugreifen.
3. Fahrzeugsitz nach Anspruch 2, wobei der Sensor (40) mit dem Sperrstift (74) verbunden ist, so dass, wenn der Passagier sich auf dem Fahrzeugsitz befindet, der Sperrstift (74) sich aus dem Eingriff mit dem Kolben (60) löst, wodurch die Bewegung der Kopfstütze (20) verhindert wird.

4. Fahrzeugsitz nach Anspruch 1, wobei, wenn der Sensor (40) anzeigt, dass der Passagier sich nicht auf dem Fahrzeugsitz befindet, der Kopfstütze (20) gestattet wird, sich zwischen der Betriebsstellung und der eingeklappten Stellung in Reaktion auf Schwenken der Rückenlehne (12) zu bewegen.
5. Fahrzeugsitz nach Anspruch 1, wobei die Kopfstütze (20) mit der Rückenlehne (12) durch einen Seilzug (32) verbunden ist, der Bewegung von der Rückenlehne (12) auf die Kopfstütze (20) überträgt.
6. Fahrzeugsitz nach Anspruch 5, wobei der Sperrmechanismus (50) ein Gehäuse (52) mit einem ersten Hohlraum (54) und einem zweiten Hohlraum (56) aufweist, wobei der Seilzug (32) und ein Kolben (60) in dem ersten Hohlraum (54) aufgenommen sind und ein Sperrstift (74) in dem zweiten Hohlraum (56) aufgenommen ist.
7. Fahrzeugsitz nach Anspruch 6, wobei der Kolben (60) gleitfähig in dem ersten Hohlraum (54) angeordnet ist und der Sperrstift (74) innerhalb des zweiten Hohlraums (56) beweglich ist.
8. Fahrzeugsitz nach Anspruch 7, wobei der Kolben (60) mit einer Vertiefung (64) ausgestaltet ist und der Sperrstift (74) in die Vertiefung (64) eingreift, um Bewegung des Kolbens (60) zu verhindern.
9. Fahrzeugsitz nach Anspruch 8, wobei bei Eingriff des Sperrstiftes (74) mit dem Kolben (60) eine Position der Hülle (36) fixiert ist und dem Seilzug (32) gestattet ist, sich durch die Hülle (36) zu bewegen, wodurch die Betätigung der Kopfstütze zugelassen wird.
10. Fahrzeugsitz nach Anspruch 7, wobei der Sperrstift (74) in Reaktion auf Eingaben von dem Sensor (40) beweglich ist, so dass, wenn der Passagier sich auf dem Fahrzeugsitz befindet, der Sperrstift (74) sich außer Eingriff mit dem Kolben (60) bewegt, wodurch Bewegung der Kopfstütze (20) in die eingeklappte Stellung verhindert wird.
11. Fahrzeugsitz nach Anspruch 7, wobei der Sensor (40) wenigstens ein Sitzpolster-Eingabekabel (42) mit einem ersten Ende, das an dem Fahrzeugsitz befestigt ist, und einem zweiten Ende aufweist, das mit dem Sperrstift (74) verbunden ist, so dass, wenn der Passagier sich auf dem Fahrzeugsitz befindet, der Sensor (40) den Sperrstift (74) dazu veranlasst, sich außer Eingriff mit dem Kolben (60) zu bewegen, wodurch Bewegung der Kopfstütze (20) in die eingeklappte Stellung verhindert wird.
12. Sperrmechanismus für einen Fahrzeugsitz mit einem Sitzflächenpolster (40), einer Rückenlehne

(12), die dazu ausgestaltet ist, um relativ zu dem Sitzflächenpolster (14) geschwenkt zu werden, und einer Kopfstütze (20), die in Reaktion auf Schwenken der Rückenlehne (12) beweglich ist, mit:

einem Gehäuse (52) mit einem ersten Hohlraum (54) und einem zweiten Hohlraum (56), einem Kolben (60), der gleitfähig in dem ersten Hohlraum (54) angeordnet ist, wobei der Kolben (60) funktionsmäßig mit einem Seilzug (32) verbunden ist, der dazu ausgestaltet ist, um Bewegung von der Rückenlehne (12) auf die Kopfstütze (20) zu übertragen, und einem Sperrstift (74), der beweglich in dem zweiten Hohlraum (56) angeordnet ist, wobei der Sperrstift (74) dazu ausgestaltet ist, um in Reaktion auf eine Eingabe von einem Sensor (40), die anzeigt, ob sich ein Passagier auf dem Fahrzeugsitz befindet oder nicht, bewegt zu werden.

13. Sperrmechanismus nach Anspruch 12, wobei auf Eingreifen des Sperrstifts (74) mit dem Kolben (60) hin die Kopfstütze (20) zwischen der Betriebsstellung und der eingeklappten Stellung beweglich ist.

14. Sperrmechanismus nach Anspruch 12, wobei der Sensor (40) mit dem Sperrstift (74) verbunden ist, wobei der Sperrstift (74) dazu ausgestaltet ist, um in Reaktion auf eine Eingabe von dem Sensor (40) bewegt zu werden, so dass, wenn sich der Passagier auf dem Fahrzeugsitz befindet, der Sperrstift (74) sich außer Eingriff mit dem Kolben (60) bewegt, wodurch Bewegung der Kopfstütze (20) in Reaktion auf Bewegung der Rückenlehne (12) verhindert wird.

15. Sperrmechanismus nach Anspruch 12, wobei auf das Lösen des Eingriffs des Sperrstifts (74) mit dem Kolben (60) hin die Kopfstütze (20) daran gehindert ist, sich in Reaktion auf Bewegung der Rückenlehne (12) in eine eingeklappte Stellung zu bewegen.

16. Sperrmechanismus nach Anspruch 12, wobei der Kolben (60) mit einer Vertiefung (64) ausgestaltet ist und der Sperrstift (74) in der Vertiefung (64) eingreift, um Bewegung des Kolbens (60) zu verhindern.

17. Verfahren zum Verhindern der Bewegung einer Kopfstütze (20) in eine eingeklappte Stellung, wenn ein Passagier sich auf dem Fahrzeugsitz befindet, mit den Schritten:

Bereitstellen des Fahrzeugsitzes mit einem Sitzflächenpolster (14), einer Rückenlehne (12), die dazu ausgestaltet ist, um relativ zu dem Sitzflächenpolster geschwenkt zu werden, und einer Kopfstütze (20), die zwischen einer Betriebsstellung und der eingeklappten Stellung in Re-

aktion auf Schwenken der Rückenlehne (12) beweglich ist,

Empfangen eines Signals von einem Sensor (40), um festzustellen, ob der Passagier sich auf dem Fahrzeugsitz befindet oder nicht, und Bereitstellen eines Sperrmechanismus (50), so dass, wenn das Signal anzeigt, dass der Passagier sich auf dem Fahrzeugsitz befindet, der Sperrmechanismus (50) Bewegung der Kopfstütze (20) zwischen der Betriebsstellung und der eingeklappten Stellung verhindert.

18. Verfahren nach Anspruch 17, wobei, wenn das Signal anzeigt, dass sich kein Passagier auf dem Fahrzeugsitz befindet, der Kopfstütze (20) gestattet wird, sich zwischen der Betriebsstellung und der eingeklappten Stellung zu bewegen.

19. Verfahren nach Anspruch 17, wobei der Sperrmechanismus (50) ein Gehäuse (52) mit einem ersten Hohlraum (54) und einem zweiten Hohlraum (56) aufweist, wobei der erste Hohlraum einen Kolben (60) aufnimmt, der gleitfähig in dem ersten Hohlraum angeordnet ist, und der zweite Hohlraum (56) einen Sperrstift (74) aufnimmt, der dazu ausgestaltet ist, um mit dem Kolben (60) einzugreifen, um Bewegung der Kopfstütze (20) zu verhindern.

30 Revendications

1. Siège de véhicule, comprenant :

un coussin de siège inférieur (14) ;
un dossier (12) configuré pour être pivoté par rapport au coussin de siège inférieur ;
un appuie-tête (20) pouvant être déplacé entre une position fonctionnelle et une position pliée en réaction au pivotement du dossier (12) ;
un capteur (40) configuré pour déterminer si un occupant est ou non présent dans le siège de véhicule ; et

un mécanisme de verrouillage (50) raccordé de manière fonctionnelle au siège de véhicule, le mécanisme de verrouillage (50) étant configuré pour empêcher un mouvement de l'appuie-tête (20) entre la position fonctionnelle et la position pliée si le capteur (40) indique que l'occupant est présent dans le siège de véhicule.

2. Siège de véhicule selon la revendication 1, dans lequel le mécanisme de verrouillage (50) comprend un logement (52) comportant un premier espace (54) et un second espace (56), le premier espace (54) recevant un piston (60) disposé à coulissement dans le premier espace, et le second espace (56) recevant une goupille de verrouillage (74) configurée pour s'accoupler avec le piston (60).

3. Siège de véhicule selon la revendication 2, dans lequel le capteur (40) est relié à la goupille de verrouillage (74) de telle sorte que, si l'occupant est présent dans le siège de véhicule, la goupille de verrouillage (74) se désaccouple du piston (60), ceci empêchant alors un mouvement de l'appuie-tête (20).
4. Siège de véhicule selon la revendication 1, dans lequel, si le capteur (40) indique que l'occupant n'est pas présent dans le siège de véhicule, alors l'appuie-tête (20) a la possibilité de se déplacer entre la position fonctionnelle et la position pliée en réaction au pivotement du dossier (12).
5. Siège de véhicule selon la revendication 1, dans lequel l'appuie-tête (20) est raccordé au dossier (12) par un câble (32) qui transfère un mouvement du dossier (12) à l'appuie-tête (20).
6. Siège de véhicule selon la revendication 5, dans lequel le mécanisme de verrouillage (50) comprend un logement (52) comportant un premier espace (54) et un second espace (56), le câble (32) et un piston (60) étant reçus dans le premier espace (54), et une goupille de verrouillage (74) étant reçue dans le second espace (56).
7. Siège de véhicule selon la revendication 6, dans lequel le piston (60) est disposé à coulissement dans le premier espace (54), et la goupille de verrouillage (74) peut être déplacée à l'intérieur du second espace (56).
8. Siège de véhicule selon la revendication 7, dans lequel le piston (60) est formé de façon à comporter un évidement (64), et la goupille de verrouillage (74) s'accouple avec l'évidement (64) afin d'empêcher un mouvement du piston (60).
9. Siège de véhicule selon la revendication 8, dans lequel, lors de l'accouplement de la goupille de verrouillage (74) avec le piston (60), une position du conduit (36) est fixée, et le câble (32) a la possibilité de se déplacer à travers le conduit (36), ceci permettant alors un actionnement de l'appuie-tête (20).
10. Siège de véhicule selon la revendication 7, dans lequel la goupille de verrouillage (74) peut être déplacée en réaction à une impulsion provenant du capteur (40) de telle sorte que, si l'occupant est présent dans le siège de véhicule, la goupille de verrouillage (74) se déplace de façon à se désaccoupler du piston (60), ceci empêchant alors un mouvement de l'appuie-tête (20) jusqu'à la position pliée.
11. Siège de véhicule selon la revendication 7, dans lequel le capteur (40) comprend au moins un câble d'impulsion (42) de coussin de siège comportant une première extrémité fixée au siège de véhicule et une seconde extrémité fixée à la goupille de verrouillage (74) de telle sorte que, si l'occupant est présent dans le siège de véhicule, le capteur (40) amène la goupille de verrouillage (74) à se déplacer de façon à se désaccoupler du piston (60), ceci empêchant alors un mouvement de l'appuie-tête (20) jusqu'à la position pliée.
12. Mécanisme de verrouillage pour un siège de véhicule comportant un coussin de siège inférieur (40), un dossier (12) configuré pour être pivoté par rapport au coussin de siège inférieur (14), et un appuie-tête (20) pouvant être déplacé en réaction au pivotement du dossier (12), comprenant :
- un logement (52) comportant un premier espace (54) et un second espace (56) ;
un piston (60) disposé à coulissement dans le premier espace (54), le piston (60) étant raccordé de manière fonctionnelle à un câble (32) qui est conçu pour transférer un mouvement du dossier (12) à l'appuie-tête (20) ; et
une goupille de verrouillage (74) disposée de manière mobile dans le second espace (56), la goupille de verrouillage (74) étant conçue pour être déplacée en réaction à une impulsion provenant d'un capteur (40) indiquant qu'un occupant est présent ou non dans le siège de véhicule.
13. Mécanisme de verrouillage selon la revendication 12, dans lequel, par suite de l'accouplement de la goupille de verrouillage (74) avec le piston (60), l'appuie-tête (20) peut être déplacé entre la position fonctionnelle et la position pliée.
14. Mécanisme de verrouillage selon la revendication 12, dans lequel le capteur (40) est raccordé à la goupille de verrouillage (74), la goupille de verrouillage (74) étant conçue pour être déplacée en réaction à une impulsion provenant du capteur (40), de telle sorte que, si l'occupant est présent dans le siège de véhicule, la goupille de verrouillage (74) se déplace de façon à se désaccoupler du piston (60), ceci empêchant alors un mouvement de l'appuie-tête (20) en réaction à un mouvement du dossier (12).
15. Mécanisme de verrouillage selon la revendication 12, dans lequel, par suite du désaccouplement de la goupille de verrouillage (74) vis-à-vis du piston (60), l'appuie-tête (20) est dans l'impossibilité de se déplacer jusqu'à une position pliée en réaction à un mouvement du dossier (12).
16. Mécanisme de verrouillage selon la revendication 12, dans lequel le piston (60) est formé de façon

comporter un évidement (64), et la goupille de verrouillage (74) s'accouple avec l'évidement (64) afin d'empêcher un mouvement du piston (60).

17. Procédé pour empêcher un mouvement d'un appuie-tête (20) jusqu'à une position pliée lorsqu'un occupant est présent dans un siège de véhicule, comprenant les étapes suivantes :
- fournir le siège de véhicule comprenant un coussin de siège inférieur (14), un dossier (12) configuré pour être pivoté par rapport au coussin de siège inférieur, et un appuie-tête (20) pouvant être déplacé entre une position fonctionnelle et la position pliée en réaction au pivotement du dossier (12) ;
 - recevoir un signal provenant d'un capteur (40) afin de déterminer si l'occupant est ou non présent dans le siège de véhicule ; et
 - fournir un mécanisme de verrouillage (50) tel que, si le signal indique que l'occupant est présent dans le siège de véhicule, le mécanisme de verrouillage (50) empêche un mouvement de l'appuie-tête (20) entre la position fonctionnelle et la position pliée.
18. Procédé selon la revendication 17, dans lequel, si le signal indique que l'occupant n'est pas présent dans le siège de véhicule, l'appuie-tête (20) a la possibilité de se déplacer entre la position fonctionnelle et la position pliée.
19. Procédé selon la revendication 17, dans lequel le mécanisme de verrouillage (50) comprend un logement (52) comportant un premier espace (54) et un second espace (56), le premier espace recevant un piston (60) disposé à coulissement dans le premier espace, et le second espace (56) recevant une goupille de verrouillage (74) configurée pour s'accoupler avec le piston (60) afin d'empêcher un mouvement de l'appuie-tête (20).

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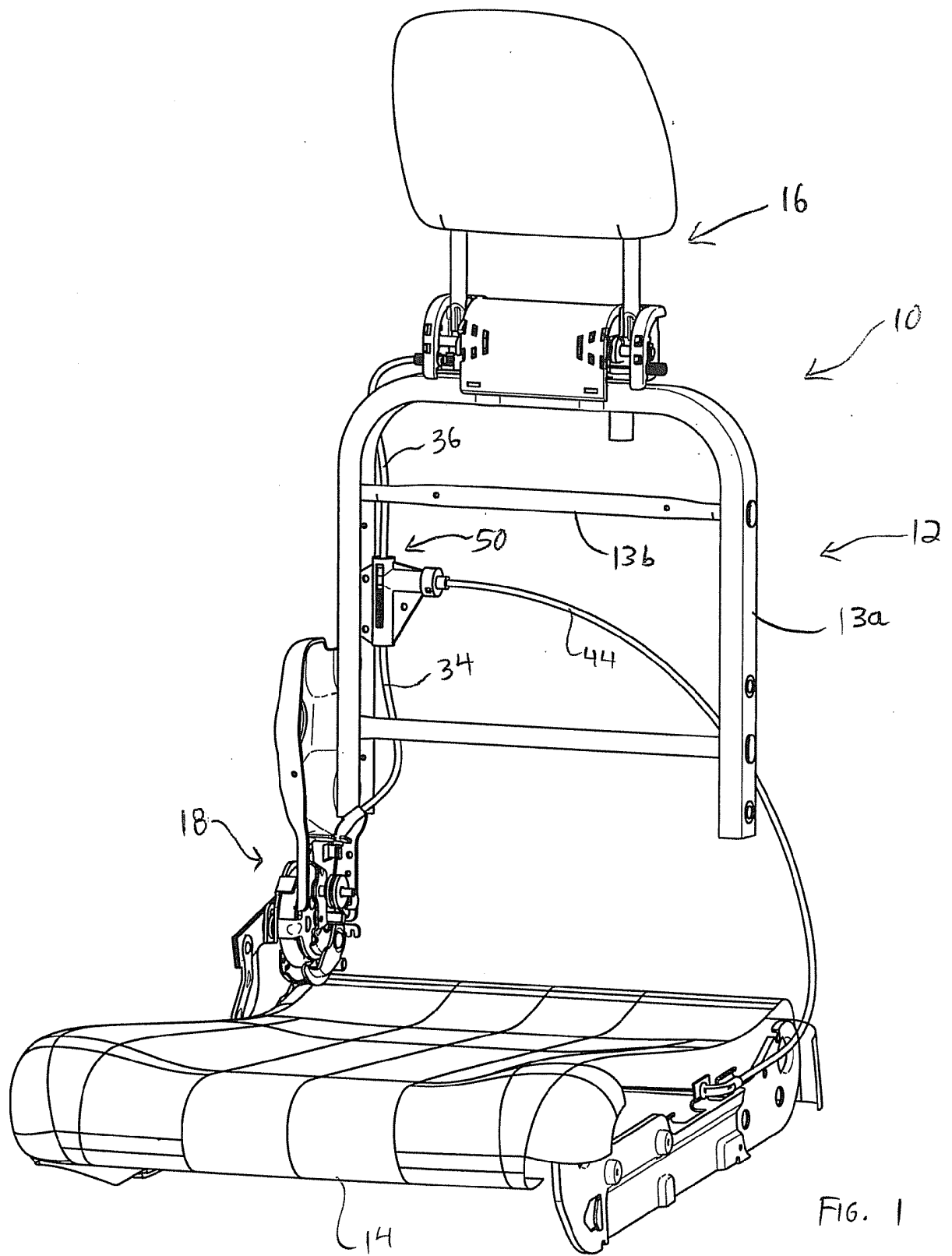


FIG. 1

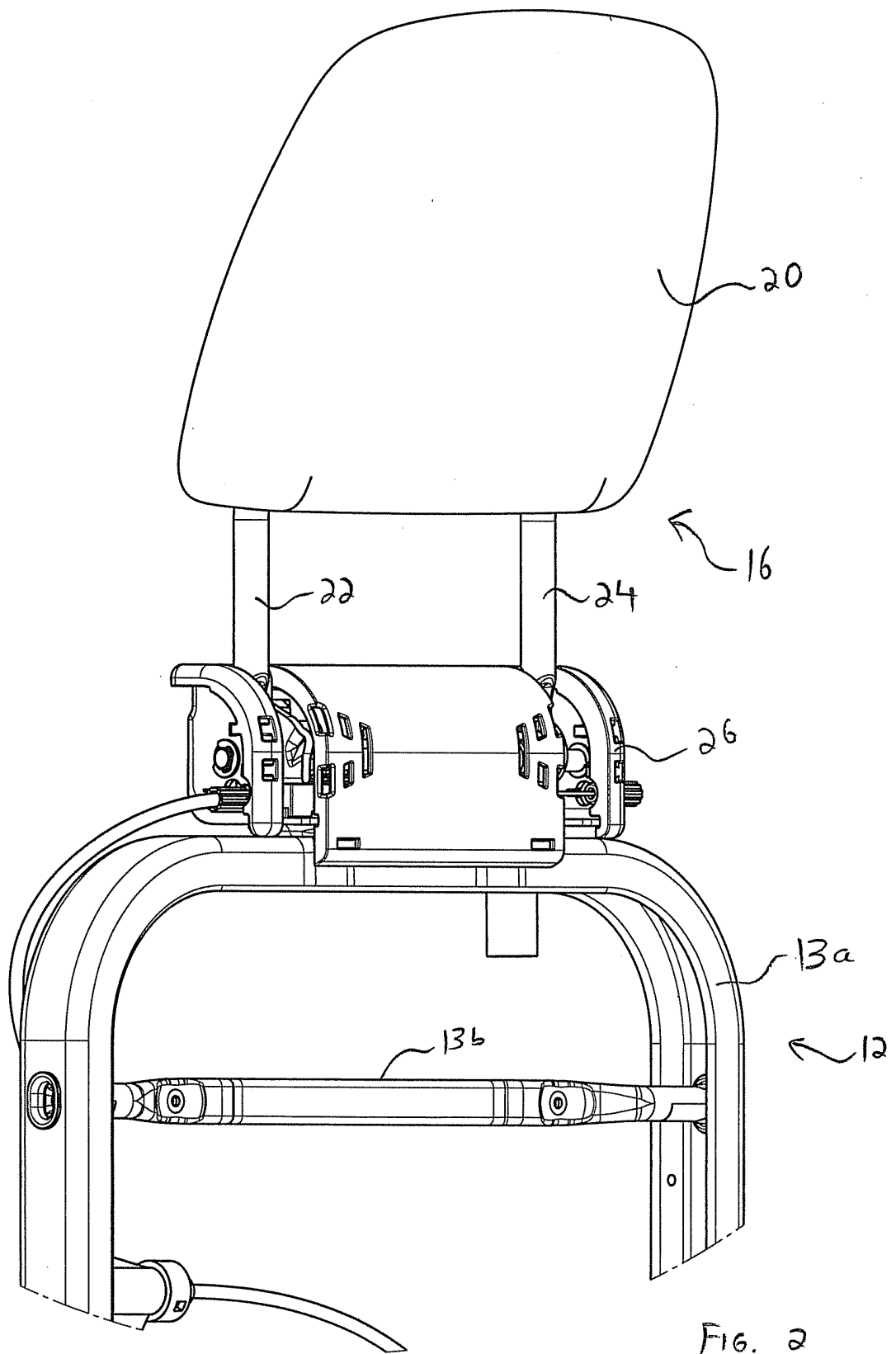


FIG. 2

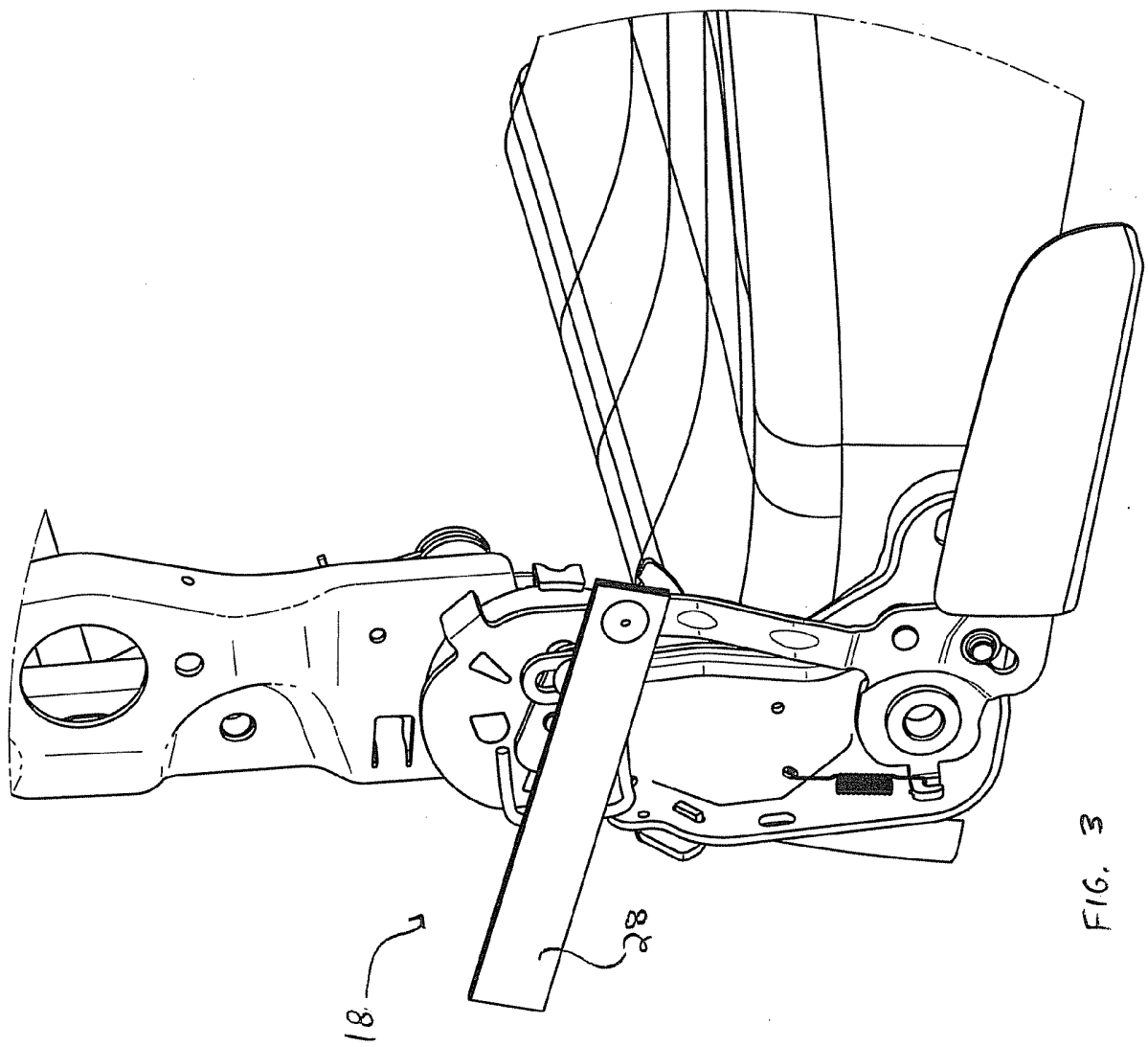
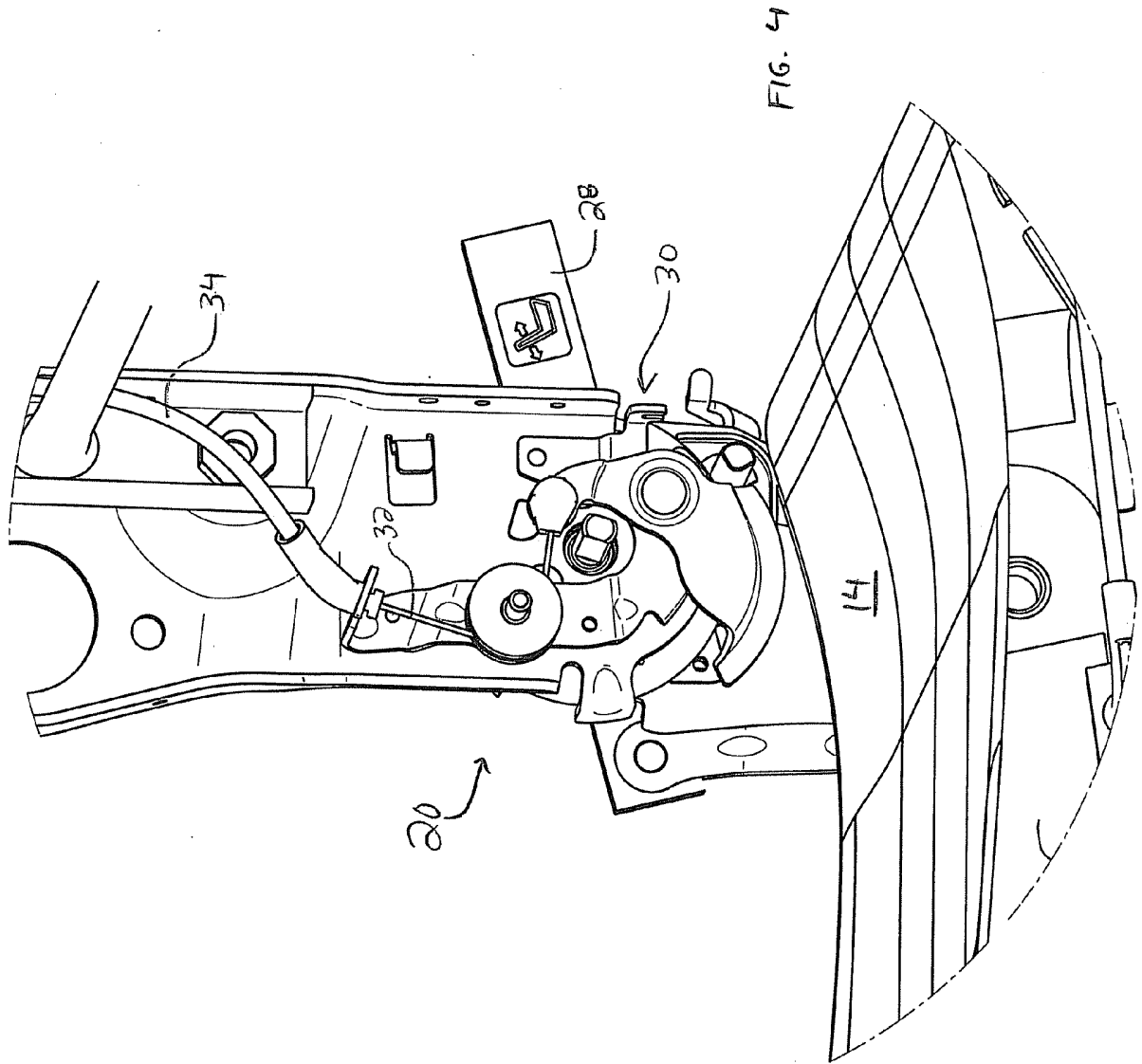


FIG. 3



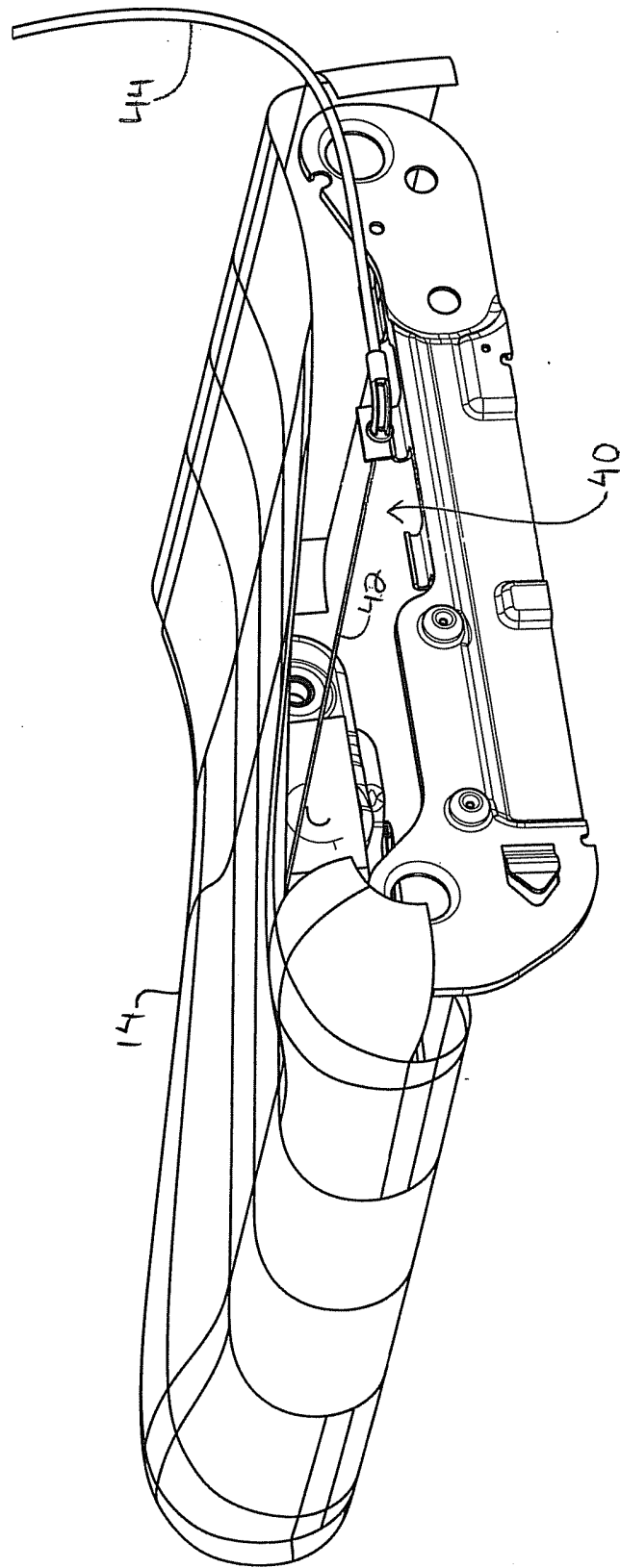


FIG. 5

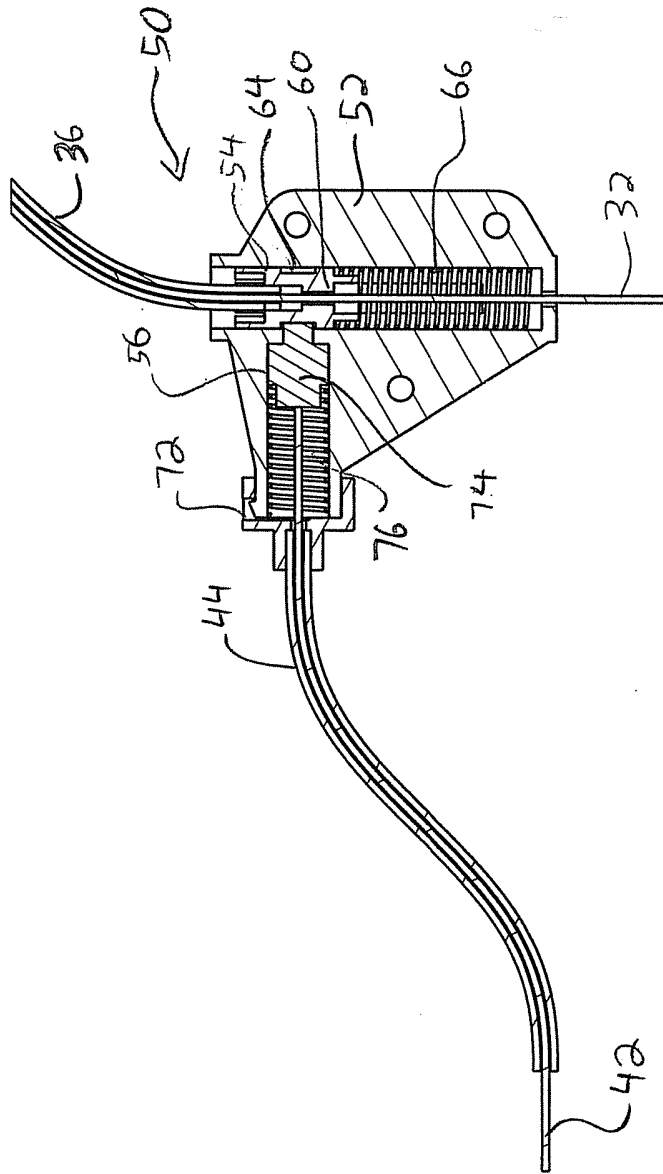


FIG. 6

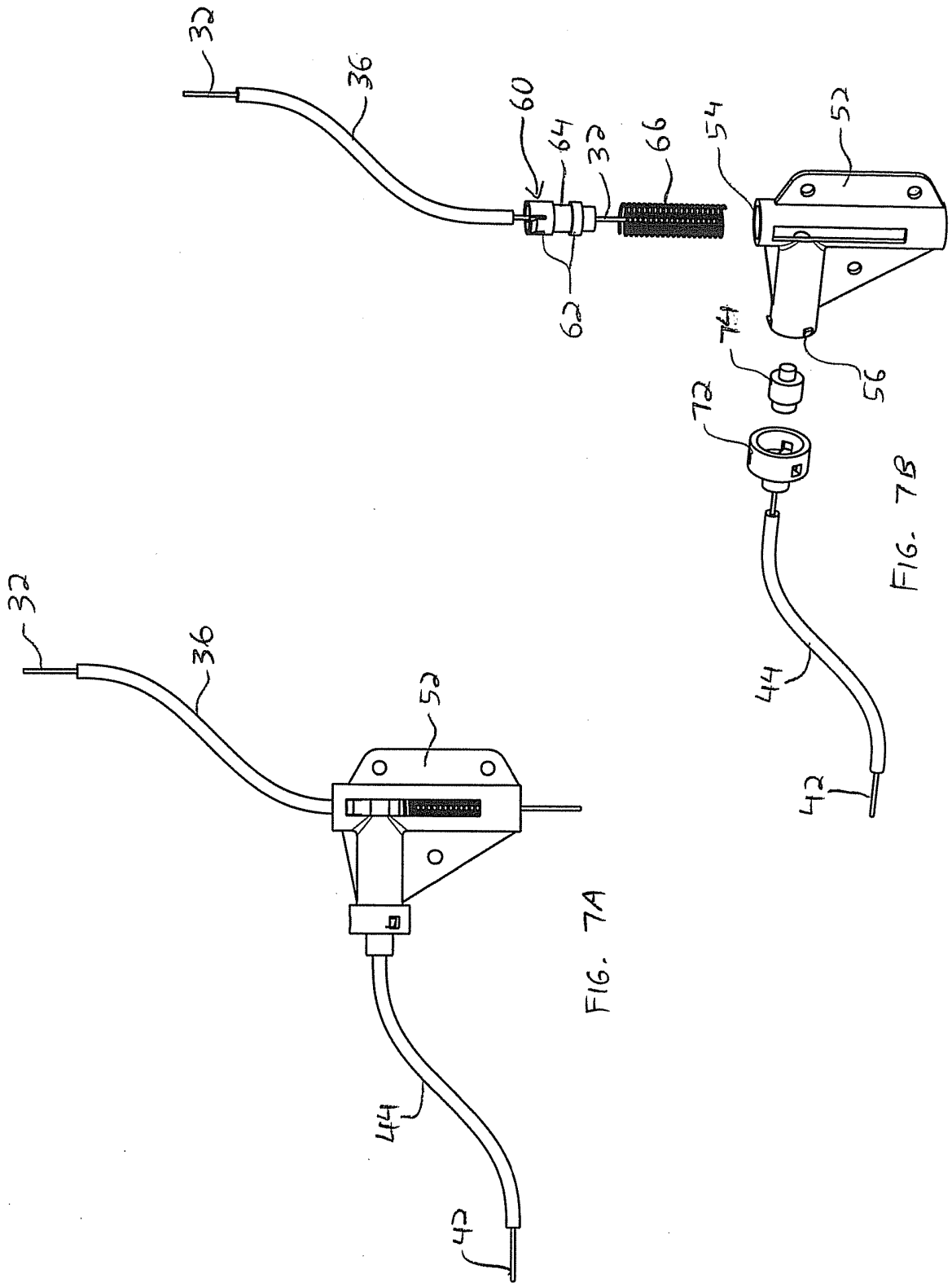


FIG. 7A

FIG. 7B

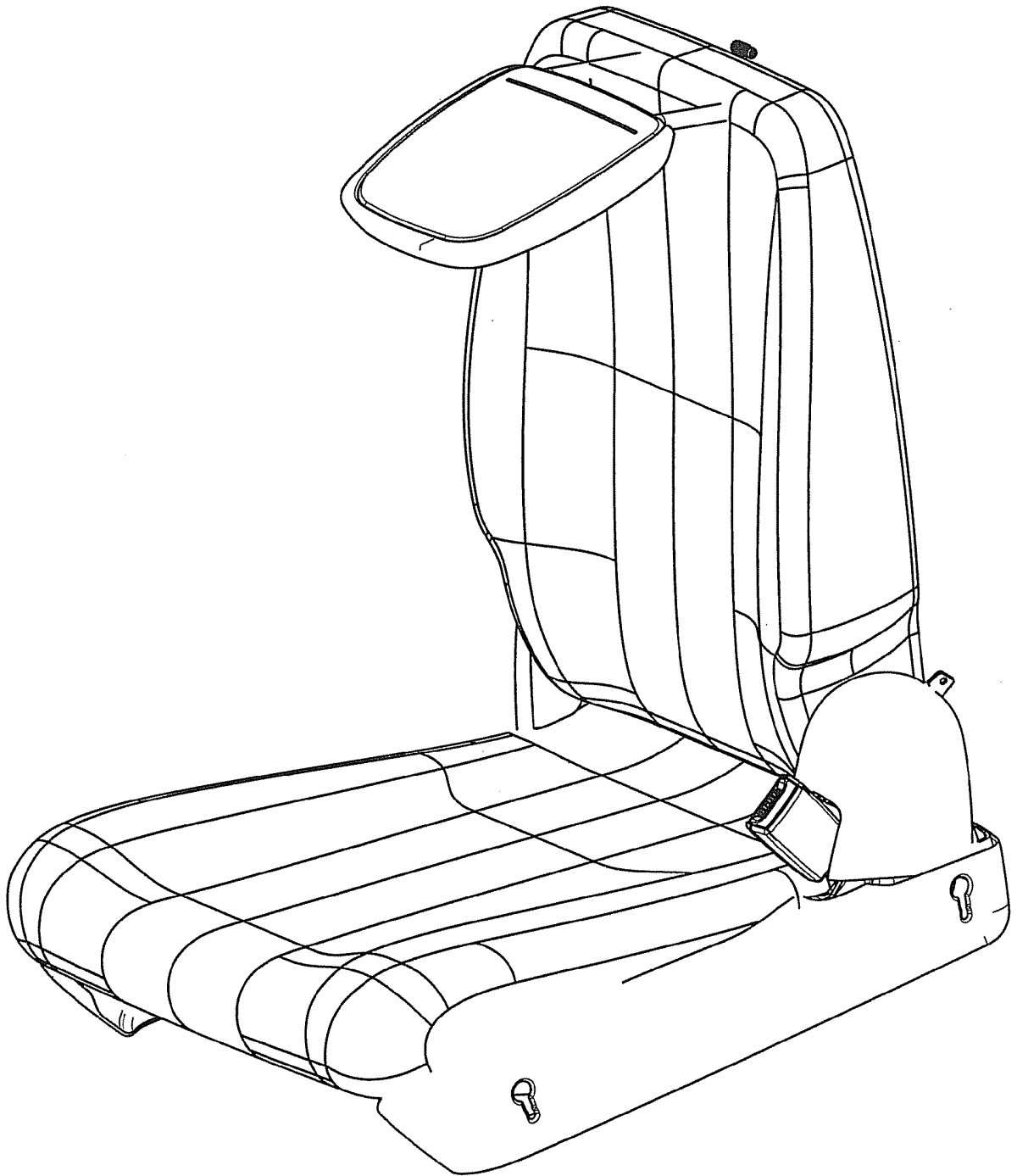


FIG. 8

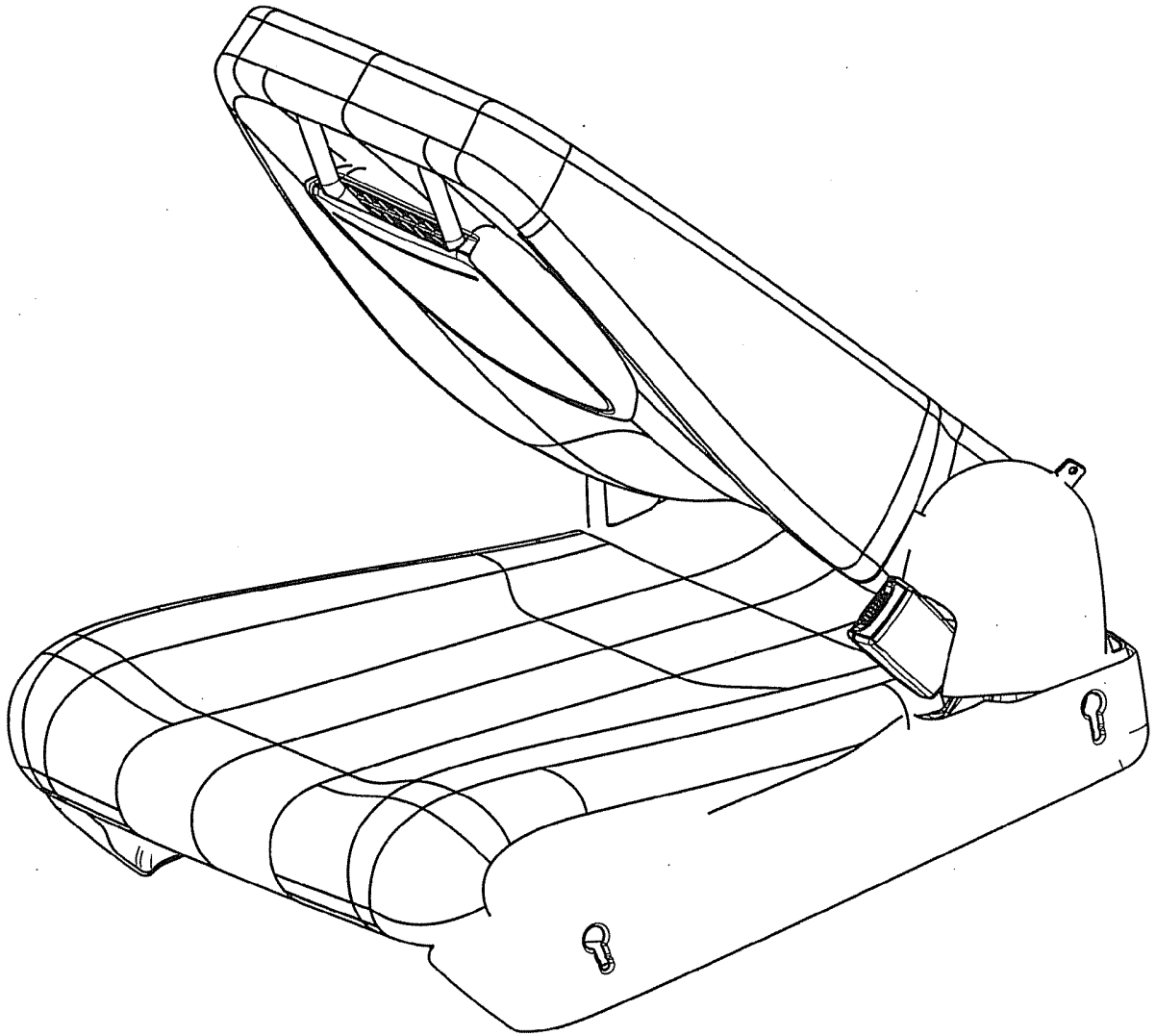


FIG. 9

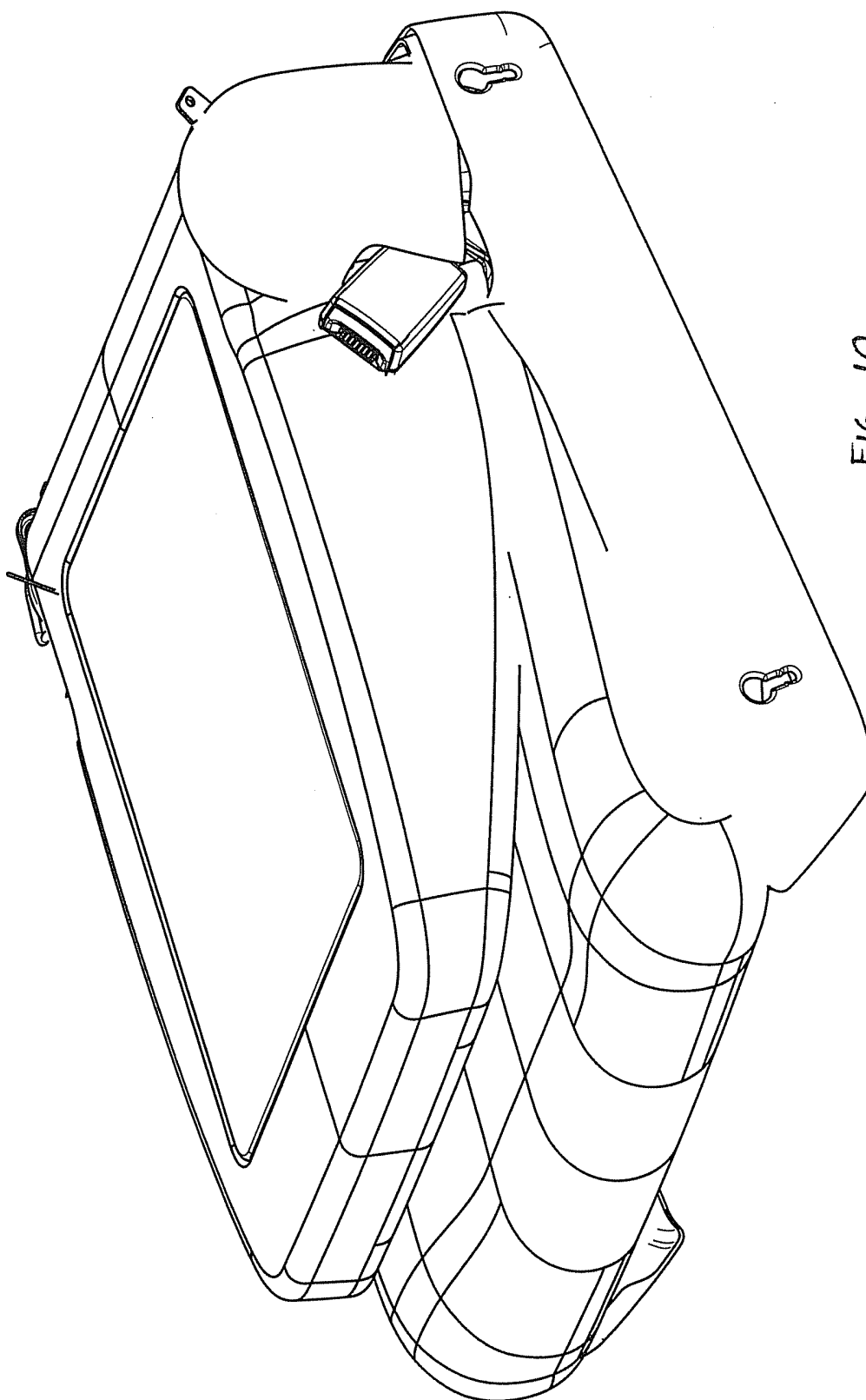


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 10216705 A1 [0006]
- EP 1612099 A2 [0007]

Reteszelő mechanizmus lehajtható fejtámlához

SZABADALMI IGÉNYPONTOK

1. Jármű ülés, ami tartalmaz:
 - egy üléspárnát (14);
 - egy háttámlát (12), ami az üléspárnához képest billenthető;
 - egy fejtámlát (20), ami egy operatív helyzet és egy lehajtott helyzet között mozgatható, a háttámla (12) billentésétől függően;
 - egy érzékelőt (40), ami érzékeli, hogy van-e utas a járműben; és
 - egy reteszelő mechanizmust (50), ami működési kapcsolatban van az üléssel, és megakadályozza, hogy a fejtámla (20) az operatív helyzet és a lehajtott helyzet között elmozduljon, amikor az érzékelő (40) jelzi, hogy utas van az ülésen.
2. Az 1. igénypont szerinti jármű ülés, ahol a reteszelő mechanizmus (50) tartalmaz egy házat (52), aminek van egy első rekesze (54) és egy második rekesze (56), ahol az első rekeszben (54) van egy elcsúsztatható dugattyú (60), és a második rekeszben (56) van egy reteszcsap (74), ami a úgy van kialakítva, hogy kapcsolódhat a dugattyúhoz (60).
3. A 2. igénypont szerinti jármű ülés, ahol az érzékelő (40) úgy van a reteszcsaphoz (74) csatlakoztatva, hogy ha utas van az ülésen, a reteszcsap (74) lekapcsolódik a dugattyúról (60) és megakadályozza, hogy a fejtámla (20) elmozduljon.
4. Az 1. igénypont szerinti jármű ülés, ahol ha az érzékelő (40) jelzi, hogy nincs utas az ülésen, akkor fejtámla (20), elmozdítható az operatív helyzet és a lehajtott helyzet között a háttámla (12) billentésétől függően.
5. Az 1. igénypont szerinti jármű ülés, ahol a fejtámla (20) egy kábel (32) segítségével van a háttámlával (12) összekötve, ami továbbítja a háttámla (12) mozgását a fejtámlához (20).
6. Az 5. igénypont szerinti jármű ülés, ahol a reteszelő mechanizmus (50) tartalmaz egy házat (52), aminek van egy első rekesze (54) és egy második rekesze (56), ahol az első rekeszben (54) van a dugattyú (60) és a kábel (32), és a második rekeszben (56) van a reteszcsap (74).
7. A 6. igénypont szerinti jármű ülés, ahol a dugattyú (60) elcsúsztatható az első rekeszben (54), és a reteszcsap (74) a második rekeszen (56) belül mozgatható.
8. A 7. igénypont szerinti jármű ülés, ahol a dugattyún (60) van egy bemélyedés (64), és a reteszcsap (74) illeszkedik ebbe a bemélyedésbe (64) a dugattyú (60) elmozdulásának megakadályozására.
9. A 8. igénypont szerinti jármű ülés, ahol amikor a reteszcsap (74) összekapcsolódik a dugattyúval (60), a vezeték (36) helyzete rögzítődik, és a kábel (32) áthaladhat a vezetéken (36), és megengedi fejtámla (20) működtetését.
10. A 7. igénypont szerinti jármű ülés, ahol a reteszcsap (74) úgy mozgatható az érzékelőtől (40) kapott jelzés alapján, hogy ha utas van az ülésen, a reteszcsap (74) lekapcsolódik a dugattyúról (60) és megakadályozza, hogy a fejtámla (20) elmozduljon a lehajtott állapotba.
11. A 7. igénypont szerinti jármű ülés, ahol az érzékelő (40) el van látva egy, az üléspárnához vezető kábellel (42), aminek az első vége az üléshez van kapcsolva, a második vége pedig a reteszcsaphoz (74)

- van rögzítve oly módon, hogy ha utas van az ülésen, a reteszcsap (74) lekapcsolódik a dugattyúról (60) és megakadályozza, hogy a fejtámla (20) elmozduljon a lehajtott állapotba.
12. Reteszelő mechanizmus jármű üléshez, ami tartalmaz egy üléspárnát (14), egy háttámlát (12), ami az üléspárnához képest billenthető, és egy fejtámlát (20), ami egy operatív helyzet és egy lehajtott helyzet között mozgatható, a háttámla (12) billentésétől függően, ahol a mechanizmus tartalmaz:
 - egy házat (52), aminek van egy első rekesze (54) és egy második rekesze (56), ahol az első rekeszben (54) van egy elcsúsztható dugattyú (60), ami működési kapcsolatban van egy kábellel (32), ami továbbítja a háttámla (12) mozgását a fejtámlához (20); és
 - egy reteszcsapot (74), ami a második rekeszben (6) van elmozdíthatóan elrendezve, és ami elmozdul, ha az érzékelő (40) jelzi, hogy van vagy nincs utas az ülésen.
 13. A 12. igénypont szerinti reteszelő mechanizmus, ahol ha reteszcsap (74) kapcsolódik a dugattyúval (60), a fejtámla (20) az operatív helyzet és a lehajtott helyzet között elmozdulhat.
 14. A 12. igénypont szerinti reteszelő mechanizmus, ahol az érzékelő (40) a reteszcsaphoz van csatlakoztatva (74), és a reteszcsap (74) úgy van kialakítva, hogy ha utas van az ülésen, a reteszcsap (74) lekapcsolódik a dugattyúról (60) és megakadályozza, hogy a fejtámla (20) elmozduljon a háttámla (12) billentésétől függően.
 15. A 12. igénypont szerinti reteszelő mechanizmus, ahol ha a reteszcsap (74) lekapcsolódik a dugattyúról (60), a fejtámla (20) nem tud elmozdulni a lehajtott állapotba a háttámla (12) billentésétől függően.
 16. A 12. igénypont szerinti reteszelő mechanizmus, ahol a dugattyún (60) van egy bemélyedés (64), és a reteszcsap (74) illeszkedik ebbe a bemélyedésbe (64) a dugattyú (60) elmozdulásának megakadályozására.
 17. Eljárás annak megakadályozására, hogy egy fejtámla (20) elmozduljon lehajtott állapotba, ha utas van a jármű ülésén, aminek során:
 - jármű ülésről gondoskodunk, ami tartalmaz egy üléspárnát (14), egy háttámlát (12), ami az üléspárnához képest billenthető, és egy fejtámlát (20), ami egy operatív helyzet és egy lehajtott helyzet között mozgatható, a háttámla (12) billentésétől függően;
 - egy jelet fogadunk egy érzékelőtől (40), hogy megállapítsuk, van-e utas a jármű ülésben; és
 - egy reteszelő mechanizmusról (50) gondoskodunk, ami megakadályozza, hogy a fejtámla (20) az operatív helyzet és a lehajtott helyzet között elmozduljon, amikor a jel azt mutatja, hogy utas van az ülésen.
 18. A 17. igénypont szerinti eljárás, ahol a jel azt mutatja, hogy nincs utas az ülésen, akkor fejtámla (20) elmozdítható az operatív helyzet és a lehajtott helyzet között.
 19. A 17. igénypont szerinti eljárás, ahol a reteszelő mechanizmus (50) tartalmaz egy házat (52), aminek van egy első rekesze (54) és egy második rekesze (56), ahol az első rekeszben (54) van egy elcsúsztható dugattyú (60), és a második rekeszben (6) van egy reteszcsap (74), ami a úgy van kialakítva, hogy kapcsolódhat a dugattyúhoz (60), hogy megakadályozza a fejtámla (20) elmozdulását.