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(54) TIP SLIDE STOW SEAT

VERSENKBARER SITZ MIT KIPP-GLEIT-MECHANISMUS

SIÈGE ESCAMOTABLE COULISSANT ET BASCULABLE

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(73) Proprietor: **Magna Seating Inc.**
Aurora, Ontario L4G 7K1 (CA)

(72) Inventor: **NGIAU, Christopher**
Wolverine Lake
Michigan 48390 (US)

(74) Representative: **Glawe, Delfs, Moll**
Partnerschaft mbB
von Patent- und Rechtsanwälten
Postfach 13 03 91
20103 Hamburg (DE)

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to and all the benefits of United States Provisional Application No. 61/086,936, filed on August 7, 2008 and entitled "Tip Slide Stow Seat."

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The invention relates to a seat assembly for an automotive vehicle. More particularly, the invention relates to a seat assembly having a seat back pivotal between a plurality of reclined seating positions, a forward tip-slide position and a fold-flat position wherein the seat back automatically triggers a track assembly to move the seat assembly to a forward position in response to pivoting the seat back to the forward tip-slide position.

2. Description of Related Art

[0003] Passenger vehicles are known to have seat assemblies with seat backs that may be selectively reclined through a range of seating positions and that may be pivoted forward to a fold-flat position. In addition, it is known for passenger vehicles to have front seat assemblies with dumping and forward translation capabilities to temporarily provide space behind the front seat assembly to allow ingress and egress of passengers occupying a rear seat assembly. This feature is typically referred to as an easy entry or "E-Z entry" feature, which is common in smaller cars and is well known in the seating art. For example, United States Patent Number 6,736,461 to Blair et al., issued May 18, 2004 discloses a vehicle seat assembly including a seat cushion, a seat back, and a rotary recliner for selective pivotal movement of the seat back relative to the seat cushion about a pivot axis (A-A) within a range of angular positions, including a tip-slide position and a fold-flat position.

[0004] US 6,736,461 B2 discloses a vehicle seat assembly including a seat cushion mounting bracket which forms part of a seat cushion, a seat back mounting bracket which forms part of a seat back, and mounting means for mounting a control member on the seat back. Further an idler ring is provided comprising a catchment portion. The control member contacts the catchment portion to drive the idler ring. A protruding lug is formed on the idler ring. A catchment portion is rigidly connected to the seat cushion. Frontward pivotal movement of the idler ring beyond a first position is arrested by contact of the protruding lug and the catchment portion. Further, an actuator cable is operably attached to the idler ring such that during pivotal movement of the idler ring the actuator cable releases a seat carriage for longitudinal movement.

[0005] It is desirable to provide an improved seat assembly having a recliner assembly adapted for selectively controlling pivotal movement of a seat back relative to a seat cushion between a plurality of seating positions, a forward tip-slide position, and a fold-flat position. It is also desirable to provide a seat assembly having a trigger mechanism for automatically releasing a track assembly to move the seat assembly to a forward position in response to pivoting the seat back to a forward tip-slide position.

SUMMARY OF THE INVENTION

[0006] According to one aspect of the invention, a seat assembly includes a seat back coupled to a seat cushion for pivotal movement relative to the seat cushion between a plurality of reclined seating positions and a forwardly folded position. A track assembly is adapted to be mounted to a floor and coupled to the seat cushion. The track assembly is operable between a locked condition and an unlocked condition allowing forward and rearward movement of the seat assembly. A recliner assembly is operatively coupled between the seat back and the seat cushion. The recliner assembly controls the pivotal movement of the seat back relative to the seat cushion. A stop member is fixedly secured to the seat cushion. The stop member engages the seat back to limit forward pivotal movement of the seat back thereby defining the forwardly folded position. A trigger mechanism is pivotally coupled to the seat cushion and is operatively coupled to the track assembly. The seat back actuates the trigger mechanism to release the track assembly from the locked condition to the unlocked condition in response to pivoting the seat back to the forwardly folded position, wherein actuating the track assembly to the unlocked condition urges the seat assembly to a forward position.

[0007] According to another aspect of the invention, a seat assembly includes a seat back coupled to a seat cushion for pivotal movement relative to the seat cushion between a plurality of reclined seating positions and a fold-flat position overlaying the seat cushion. A recliner assembly is operatively coupled between the seat back and the seat cushion. The recliner assembly controls the pivotal movement of the seat back relative to the seat cushion. A stop member is fixedly secured to the seat cushion. The stop member engages the seat back to limit forward pivotal movement of the seat back thereby defining a forwardly folded position between the plurality of reclined seating positions and the fold-flat position. A pin mechanism includes a pin slidably coupled to the seat back. The pin is movable between an extended position which engages with the stop member to arrest the forward pivotal movement of the seat back in the forwardly folded position and a retracted position allowing the forward pivotal movement of the seat back to the fold-flat position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Other advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of a seat assembly including a recliner assembly according to one embodiment of the invention;

Figure 2 is a fragmentary, perspective view of the seat assembly illustrating the recliner assembly when a seat back is in an upright seating position;

Figure 2A is an exploded view of a portion of the recliner assembly;

Figure 3 is a fragmentary, perspective view of a track assembly illustrating a track release system when the track assembly is in a locked condition;

Figure 4 is a fragmentary, perspective view of a pin mechanism illustrating a pin in a retracted position;

Figure 5 is a fragmentary, perspective view of the pin mechanism illustrating the pin in an extended position;

Figure 6A is a side view of the seat assembly with the seat back in the upright seating position;

Figure 6B is a fragmentary, perspective view of the seat assembly illustrating the recliner assembly when the pin is in the extended position;

Figure 7A is a side view of the seat assembly with the seat back in a forward tip-slide position;

Figure 7B is a fragmentary, perspective view of the seat assembly illustrating the recliner assembly when the pin is in the extended position and the seat back is in the forward tip-slide position;

Figure 8A is a side view of the seat assembly in a forward position and the seat back in the forward tip-slide position;

Figure 8B is a fragmentary, perspective view of the track assembly illustrating the track release system when the track assembly is in an unlocked condition; and

Figure 9 is a side view of the seat assembly with the seat back in a fold-flat position.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0009] Referring to Figure 1, a vehicle seat assembly is generally shown at 10. The seat assembly 10 includes a seat back 12 and a seat cushion 14, and is adapted for supporting a seat occupant above a vehicle floor 16. The construction of the seat back 12 includes a seat back frame 18 for supporting a contoured pad made of foam, or the like, encased by a trim cover 20, as conventionally known to one skilled in the art, shown in phantom outline. In addition, the construction of the seat cushion 14 includes a seat cushion frame 22 for supporting a contoured pad encased by a trim cover 24, shown in phantom outline. The seat cushion frame 22 is coupled to a pair of seat cushion brackets 26.

[0010] A recliner assembly, generally shown at 30, is provided for allowing selective pivotal or angular adjustment of the seat back 12 relative to the seat cushion 14 about a pivot axis A, shown in Figure 2. The recliner assembly 30 allows pivotal movement of the seat back 12 relative to the seat cushion 14 between a plurality of reclined seating positions, including an upright seating position, shown in Figures 1 and 6A. The recliner assembly 30 also allows pivotal movement of the seat back 12 between any one of the plurality of reclined seating positions and a forward tip-slide or easy-entry position, shown in Figures 7A and 8A. Further, the recliner assembly 30 allows pivotal movement of the seat back 12 between any one of the plurality of reclined seating positions or the forward tip-slide position and a fold-flat position wherein the seat back 12 is generally horizontal and overlaying the seat cushion 14, as shown in Figure 9. The seat back 12 is biased by known means, such as a clock spring, to pivot forwardly towards the forward tip-slide and fold-flat positions.

[0011] Referring to Figures 2 and 2A, the recliner assembly 30 includes a tip release lever 32, a recliner handle 34, a recliner lever 36 having an extended portion 38 extending laterally therefrom, and a pair of disc recliners 40 (one shown) operatively coupled between the seat back frame 18 and the seat cushion brackets 26. The recliner lever 36 is disposed adjacent an outer side 41 of the seat cushion bracket 26 on an outboard side of the seat assembly 10. The recliner handle 34 is disposed adjacent the recliner lever 36 and the tip release lever 32 is disposed adjacent the recliner handle 34. Each disc recliner 40 is operable between a locked configuration in which the seat back 12 is fixed relative to the seat cushion 14 and an unlocked configuration in which the seat back 12 is pivotally moveable relative to the seat cushion 14. Each disc recliner 40 includes a shaft 42 that is co-axial with the pivot axis A and the disc recliners 40 are operatively coupled together by a cross-talk tube 43 for simultaneous actuation thereof, as is well known to one skilled in the art. Rotation of the shafts 42 actuates the disc recliners 40 between the locked configuration and the unlocked configuration. Referring to the disc recliner 40 on the outboard side of the seat assembly 10, the

shaft 42 extends laterally through a first opening 44 in the tip release lever 32, a second opening 46 in the recliner handle 34, a third opening 48 in the recliner lever 36, and a fourth opening (not shown) in the corresponding seat cushion bracket 26.

[0012] The recliner lever 36 is fixedly coupled to the shaft 42 to cause rotation thereto. The recliner handle 34 and the tip release lever 32 are pivotally coupled to the shaft 42 and each is adapted for selective engagement with the extended portion 38 of the recliner lever 36. More specifically, pivoting the recliner handle 34 in a first direction causes the recliner handle 34 to engage the extended portion 38 of the recliner lever 36, which pivots the recliner lever 36 in the first direction. Pivoting the recliner lever 36 in the first direction causes the shaft 42 to rotate in the first direction, thereby actuating the disc recliners 40 from the locked configuration to the unlocked configuration. Similarly, pivoting the tip release lever 32 in the first direction causes the tip release lever 32 to engage the extended portion 38 of the recliner lever 36, which pivots the recliner lever 36 in the first direction, thereby actuating the disc recliners 40 from the locked configuration to the unlocked configuration, as described above.

[0013] A first release cable 50 is operatively interconnected between a tip release handle or easy-entry handle 52 attached to an upper end of the seat back 12 and the tip release lever 32 for pivotally moving the tip release lever 32 in the first direction in response to actuating the tip release handle 52. As described above, pivoting the tip release lever 32 in the first direction causes the tip release lever 32 to engage the extended portion 38 of the recliner lever 36, which in turn actuates the disc recliners 40. Thus, actuation of the disc recliners 40 by the tip release handle 52 is decoupled from actuation of the disc recliners 40 by the recliner handle 34.

[0014] The recliner assembly 30 further includes a stop member 54 and a trigger mechanism 56. The stop member 54 is secured to the outer side 41 of the seat cushion bracket 26 on the outboard side of the seat assembly 10 and is angularly disposed along a path of movement of the seat back 12 between the upright seating position and the fold-flat position. The stop member 54 is adapted to restrict forward pivotal movement of the seat back 12 with interference engagement to hold the seat back 12 in the forward tip-slide position, which is angularly disposed between the upright seating position and the fold-flat position, as shown in Figures 7A and 8A.

[0015] The trigger mechanism 56 is pivotally coupled to the outer side 41 of the seat cushion bracket 26 on the outboard side of the seat assembly 10 and is pivotally moveable between a first position and a second position. In the first position, the trigger mechanism 56 is angularly spaced apart from the stop member 54, as shown in Figures 2 and 6B. In the second position, the trigger mechanism 56 is angularly aligned with the stop member 54, as shown in Figure 7B. To actuate the trigger mechanism 56, the trigger mechanism 56 is pivotally moved from the first position to the second position.

[0016] A track assembly, generally shown at 58 in Figure 1, is operable between a locked condition and an unlocked condition for selective sliding movement of the seat assembly 10 forward and rearward relative to the floor 16. A towel bar 59, shown in Figures 6A, 7A, 8A, and 9, is operatively coupled to the track assembly 58 and may be operated by the occupant to actuate the track assembly 58 from the locked condition to the unlocked condition. The trigger mechanism 56 is also operatively connected to the track assembly 58. Actuating the trigger mechanism 56 releases the track assembly 58 from the locked condition to the unlocked condition. The track assembly 58 includes a fixed track member 60 secured to the floor 16, a moveable track member 62 coupled to the seat cushion 14, and a track release system 64, shown in Figure 3, configured to actuate the track assembly 58 between the locked and unlocked conditions. The moveable track member 62 is slidably coupled to the fixed track member 60 and is adapted to slide forward and rearward along the fixed track member 60 when the track assembly 58 is in the unlocked condition. The moveable track member 62 is biased in a forward direction such that when the track assembly 58 is in the unlocked condition the seat assembly 10 is urged toward a forward position.

[0017] The track release system 64 includes a generally L-shaped first plate 66 having a connecting end 68 and a free end 70. The connecting end 68 is pivotally coupled to the moveable track member 62 and the free end 70 has a first distal portion 72 that is bent upwardly. The track release system 64 further includes a second plate 74 operatively in contact with the free end 70 of the first plate 66. The second plate 74 includes a second distal portion 76 that is bent downwardly. A track cable 78 is operatively interconnected between the track release system 64 and the trigger mechanism 56 of the recliner assembly 30 to release the track assembly 58 from the locked condition to the unlocked condition when the trigger mechanism 56 is actuated, which permits the seat assembly 10 to move forward and rearward along the track assembly 58. More specifically, one end of the track cable 78 is coupled to the free end 70 of the first plate 66 and another end of the track cable 78 is coupled to an arm 79 of the trigger mechanism 56 such that pivoting the trigger mechanism 56 from the first position to the second position pulls the track cable 78 and causes the first plate 66 to pivot about the connecting end 68.

[0018] When the track assembly 58 is in the locked condition, the first distal portion 72 of the first plate 66 is adjacent the second distal portion 76 of the second plate 74, as shown in Figure 3. When the track release system 64 is actuated by pulling the track cable 78, the first plate 66 pivots in a counterclockwise direction (when viewed from Figures 3 and 8B) and the first plate 66 pushes the second plate 74 downward, as shown in Figure 8B. Pushing the second plate 74 downward releases the track assembly 58 from the locked condition to the unlocked

condition, which permits the moveable track member 62 to slide forward and rearward relative to the fixed track member 60.

[0019] Referring to Figures 4 and 5, a pin mechanism, generally shown at 80, is coupled to an inner side 81 of the seat back frame 18 on the outboard side of the seat assembly 10. The pin mechanism 80 has a pin 82 moveable between a first or extended position and a second or retracted position and is adapted for selectively engaging the trigger mechanism 56 of the recliner assembly 30 to release the track assembly 58 for forward and rearward movement of the seat assembly 10. The pin 82 is also adapted for selectively engaging the stop member 54 of the recliner assembly 30 to hold the seat back 12 in the forward tip-slide position, which is angularly disposed between the upright seating position and the fold-flat position. The pin mechanism 80 includes a generally tubular pin housing 84 that is fixedly secured to the seat back frame 18 and includes a first slot 86 and a second slot 88 on opposing sides thereof. Each of the first and second slots 86, 88 has a front end 90 generally towards the seat back frame 18, shown in Figure 4, and a rear end 92 generally away from the seat back frame 18, shown in Figure 5.

[0020] The pin 82 is normally in the extended position. The recliner handle 34 is operatively connected to the pin mechanism 80, such that actuation of the recliner handle 34 causes the pin 82 to move from the extended position to the retracted position. The tip release handle 52 is operatively connected to the pin mechanism 80, such that actuation of the tip release handle 52 causes the pin 82 to move from the retracted position to the extended position. A recliner cable 94 and a second release cable 96 each has a connecting member 98, 100 attached to opposing sides of the pin 82 through the first and second slots 86, 88 of the pin housing 84. The recliner cable 94 is operatively interconnected between the pin 82 and the recliner handle 34 and the second release cable 96 is operatively interconnected between the pin 82 and the tip release handle 52 for cooperatively moving the pin 82 between the retracted and extended positions.

[0021] When the pin 82 is in the retracted position, the pin 82 is disposed within the pin housing 84 such that the pin 82 does not extend through an opening 85 in the seat back frame 18, as shown in Figure 2. In the retracted position, the connecting members 98, 100 are both adjacent to the rear ends 92 of the first and second slots 86, 88 of the pin housing 84, as shown in Figure 4. Therefore, in the retracted position, the pin 82 does not engage the trigger mechanism 56 or the stop member 54 upon forward pivotal movement of the seat back 12.

[0022] When the pin 82 is in the extended position, the pin 82 is extended laterally from the pin housing 84 such that the pin 82 extends through the opening 85 in the seat back frame 18, as shown in Figures 6B and 7B. Therefore, in the extended position, the pin 82 engages the trigger mechanism 56 and the stop member 54 upon forward pivotal movement of the seat back 12.

[0023] In operation, beginning with the seat back 12 in the upright seating position, shown in Figure 6A, the seat occupant may lift the recliner handle 34 upwardly to pivotally adjust the seat back 12 between the plurality of reclined seating positions. Lifting the recliner handle 34 causes the recliner handle 34 to engage the extended portion 38 of the recliner lever 36, which in turn causes the shaft 42 to rotate in the first direction and thereby actuates the disc recliners 40 to the unlocked configuration. The seat occupant is now free to pivotally adjust the seat back 12 relative to the seat cushion 14 to any desired reclined seating position. Lifting the recliner handle 34 also pulls the recliner cable 94 which causes the pin 82 to move from the extended position to the retracted position, shown in Figure 2. Thus, with the pin 82 in the retracted position if the seat occupant is not seated in the seat assembly 10 the seat back 12 may be pivoted forwardly to the fold-flat position without engagement between the pin 82 and the trigger mechanism 56 or the stop member 54. To return the seat back 12 from the fold-flat position, the occupant lifts the seat back 12 until the disc recliners 40 return to the locked configuration with the seat back 12 in the upright seating position.

[0024] To move the seat back 12 from the upright seating position, shown in Figure 6A, or any one of the plurality of reclined seating positions, to the forward tip-slide position, shown in Figure 8A, the occupant when not seated in the seat assembly 10 pulls the tip release handle 52 upwardly to actuate the first and second release cables 50, 96. The tip release lever 32, in turn, pivots in the first direction in response to actuating the first release cable 50 and engages the extended portion 38 of the recliner lever 36, which causes the recliner lever 36 to pivot in the first direction. Pivoting the recliner lever 36 in the first direction causes the shaft 42 to rotate in the first direction, thereby actuating the disc recliners 40 to the unlocked configuration, which allows forward pivotal movement of the seat back 12. The concurrent actuation of the second release cable 96 causes the pin 82 to move from the retracted position to the extended position whereat the pin 82 extends through the opening 85 in the seat back frame 18 and is in position to engage the trigger mechanism 56, shown in Figure 6B. With continued forward pivotal movement of the seat back 12, the extended pin 82 drivingly engages the trigger mechanism 56 causing the trigger mechanism 56 to pivot forward until the pin 82 also contacts the stop member 54 and the trigger mechanism 56 is angularly aligned therewith, as shown in Figure 7B. Contact between the pin 82 and the stop member 54 arrests the forward pivotal movement of the seat back 12 such that the seat back 12 is angularly disposed in the forward tip-slide position between the upright seating position and the fold-flat position, as shown in Figure 7A. Pivotal movement of the trigger mechanism 56 also pulls the track cable 78 to actuate the track release system 64 to release the track assembly 58 from the locked condition to the unlocked condition. Pulling the track cable 78 causes the first plate 66 to pivot in the

counterclockwise direction such that the first plate 66 pushes the second plate 74 downward to release the track assembly 58 from the locked condition to the unlocked condition. In the unlocked condition, the moveable track member 62 is biased in the forward direction to move the seat assembly 10 to the forward position. With the seat back 12 in the forward tip-slide position and the seat assembly 10 in the forward position, space is provided to access a rear storage area or to allow ingress and egress to a rear seat.

[0025] To return the seat back 12 to the upright seating position from the forward tip-slide position, the occupant pushes the seat assembly 10 rearward and because the track assembly 58 is in the unlocked condition the seat assembly 10 moves rearward along the track assembly 58 to a rearward position. When the seat assembly 10 reaches the rearward position sliding movement of the seat assembly 10 stops and the seat back 12 pivots rearwardly toward the upright seating position. As the extended pin 82 disengages with the trigger mechanism 56 and the stop member 54, the trigger mechanism 56 returns to the first position, which permits the track cable 78 to relax such that the track release system 64 returns the track assembly 58 to the locked condition. The occupant continues to pivot the seat back 12 rearwardly until the disc recliners 40 return to the locked configuration and the seat back 12 is in the upright seating position, as shown in Figure 6A.

[0026] The seat back 12 may also be moved from the forward tip-slide position, shown in Figure 8A, to the fold-flat position, shown in Figure 9. To move the seat back 12 from the forward tip-slide position to the fold-flat position, the occupant lifts the recliner handle 34 upwardly. Lifting the recliner handle 34 pulls the recliner cable 94, which causes the pin 82 to move from the extended position to the retracted position whereat the pin 82 does not extend through the opening 85 in the seat back frame 18 and is disengaged from contact with the stop member 54. When the pin 82 is disengaged from the stop member 54, the seat back 12 is free to pivot forwardly to the fold-flat position wherein the seat back 12 is generally horizontal and overlaying the seat cushion 14, as shown in Figure 9.

[0027] The invention has been described here in an illustrative manner, and it is to be understood that the terminology used is intended to be in the nature of words of description rather than limitation. Many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced other than as specifically enumerated within the description.

Claims

1. A seat assembly (10) for supporting an occupant above a floor (16) in an automotive vehicle, the seat assembly (10) comprising:

a seat cushion (14);
a seat back (12) coupled to the seat cushion (14) for pivotal movement relative to the seat cushion (14) between a plurality of reclined seating positions and a fold-flat position overlaying the seat cushion (14);
a recliner assembly (30) operatively coupled between the seat back (12) and the seat cushion (14), the recliner assembly (30) controlling the pivotal movement of the seat back (12) relative to the seat cushion (14);
a track assembly (58) adapted to be mounted to the floor (16) and coupled to the seat cushion (14), the track assembly (58) operable between a locked condition and an unlocked condition allowing forward and rearward movement of the seat assembly (10);
a trigger mechanism (56) pivotally coupled to the seat cushion (14) and operatively coupled to the track assembly (58), the seat back (12) actuating the trigger mechanism (56) to release the track assembly (58) from the locked condition to the unlocked condition in response to pivoting the seat back (12) to the forwardly folded position, wherein actuating the track assembly (58) to the unlocked condition urges the seat assembly (10) to a forward position;
a stop member (54) fixedly secured to the seat cushion (14), the stop member (54) engaging the seat back (12) to limit forward pivotal movement of the seat back (12) thereby defining a forwardly folded position between the plurality of reclined seating positions and the fold-flat position, and
a pin mechanism (80) having a pin (82) slidably coupled to the seat back (12), the pin (82) moveable between an extended position for selectively engaging the trigger mechanism (56) and the stop member (54) to arrest the forward pivotal movement of the seat back (12) in the forwardly folded position and a retracted position allowing the forward pivotal movement of the seat back (12) to the fold-flat position.

2. The seat assembly (10) as set forth in claim 1, wherein the trigger mechanism (56) pivots from a first position angularly spaced with the stop member (54) to a second position angularly aligned with the stop member (54) in response to pivoting the seat back (12) to the forwardly folded position.

3. A seat assembly (10) as set forth in claim 1 or 2, wherein the track assembly (58) includes a track release system (64) to actuate the track assembly (58) between the locked and unlocked conditions, the trigger mechanism (56) and the track release system

(64) operatively coupled together with a first cable (78).

4. A seat assembly (10) as set forth in any one of claims 1 to 3, wherein the seat back (12) pivots between the plurality of reclined seating positions and a fold-flat position overlaying the seat cushion (14), the forwardly folded position angularly disposed between the plurality of reclined seating positions and the fold-flat position.

5. A seat assembly (10) as set forth in any one of claims 1 to 4, wherein the recliner assembly (30) includes a disc recliner (40) having a recliner shaft (42), wherein rotation of the recliner shaft (42) actuates the disc recliner (40) between a locked configuration fixing the seat back (12) relative to the seat cushion (14) and an unlocked configuration allowing the pivotal movement of the seat back (12).

6. A seat assembly (10) as set forth in claim 5, including a recliner lever (36) fixedly secured to the recliner shaft (42), a recliner handle (34) pivotally coupled to the recliner shaft (42) and engageable with the recliner lever (36) during rotation of the recliner handle (34) in a first direction to actuate the disc recliner (40) to the unlocked condition, and a release lever (32) pivotally coupled to the recliner shaft (42) and engageable with the recliner lever (36) independent of the recliner handle (34) during rotation of the release lever (32) in the first direction to actuate the disc recliner (40) to the unlocked condition.

7. A seat assembly (10) as set forth in claim 6, including a release handle (52) mounted to the seat assembly (10) and operatively coupled to the release lever (32) and the pin (82), wherein operation of the release handle (52) rotates the release lever (32) in the first direction to actuate the disc recliner (40) to the unlocked condition allowing the forward pivotal movement of the seat back (12) and simultaneously moves the pin (82) from the retracted position to the extended position to engage with the trigger mechanism (56) to actuate the trigger mechanism (56) and the stop member (54) to arrest the forward pivotal movement of the seat back (12) in the forwardly folded position.

8. A seat assembly (10) as set forth in claim 7, including a second cable (94) operatively coupling the recliner handle (34) and the pin (82), wherein rotation of the recliner handle (34) in the first direction moves the pin (82) from the extended position to the retracted position to allow the forward pivotal movement of the seat back (12) to the fold-flat position.

9. A seat assembly (10) as set forth in claim 8, including a third cable (50) operatively coupling the release handle (52) and the release lever (32) and a fourth cable (96) operatively coupling the release handle (52) and the pin (82).

10. A seat assembly (10) as set forth in claim 9, wherein the pin mechanism (80) includes a housing (84) fixedly secured to the seat back (12), the housing (84) having first and second slots (86, 88) on opposing sides thereof, the pin (82) slidably disposed in the housing (84) and movable between the extended and retracted positions.

11. A seat assembly (10) as set forth in claim 10, wherein the second cable (94) is coupled to the pin (82) through the first slot (86) and the fourth cable (96) is coupled to the pin (82) through the second slot (88).

Patentansprüche

1. Sitzanordnung (10) zum Tragen eines Insassen über einem Boden (16) in einem Kraftfahrzeug, wobei die Sitzanordnung (10) Folgendes umfasst:

ein Sitzpolster (14);
eine Sitzrückenlehne (12), die zur Schwenkbewegung in Bezug auf das Sitzpolster (14) zwischen mehreren geneigten Sitzpositionen und einer flachgelegten Position, in der sie das Sitzpolster (14) überlagert, mit dem Sitzpolster (14) gekoppelt ist;
eine Lehnenverstellungsanordnung (30), die zwischen der Sitzrückenlehne (12) und dem Sitzpolster (14) betriebstechnisch gekoppelt ist, wobei die Lehnenverstellungsanordnung (30) die Schwenkbewegung der Sitzrückenlehne (12) in Bezug auf das Sitzpolster (14) steuert;
eine Führungsanordnung (58), die ausgelegt ist, am Boden (16) angebracht und mit dem Sitzpolster (14) gekoppelt zu sein, wobei die Führungsanordnung (58) zwischen einem verriegelten Zustand und einem entriegelten Zustand, der die Vorwärts- und Rückwärtsbewegung der Sitzanordnung (10) ermöglicht, betreibbar ist;
einen Auslösemechanismus (56), der schwenkbar mit dem Sitzpolster (14) gekoppelt ist und mit der Führungsanordnung (58) betriebstechnisch gekoppelt ist, wobei die Sitzrückenlehne (12) als Antwort auf das Schwenken der Sitzrückenlehne (12) in die nach vorne gelegte Position den Auslösemechanismus (56) betätigt, um die Führungsanordnung (58) aus dem verriegelten Zustand in den entriegelten Zustand freizugeben, wobei das Betätigen der Führungsanordnung (58) in den entriegelten Zustand die Sitzanordnung (10) in eine vordere Position zwingt;
ein Anschlagelement (54), das am Sitzpolster

(14) arretiert befestigt ist, wobei sich das Anschlagelement (54) mit der Sitzrückenlehne (12) in Eingriff befindet, um die Schwenkbewegung der Sitzrückenlehne (12) nach vorne zu begrenzen, wodurch eine nach vorne gelegte Position zwischen den mehreren geneigten Sitzpositionen und der flachgelegten Position definiert wird; und

einen Bolzenmechanismus (80), der einen Bolzen (82) aufweist, der mit der Sitzrückenlehne (12) gleitend gekoppelt ist, wobei der Bolzen (82) zwischen einer ausgefahrenen Position zum wahlweisen Eingriff mit dem Auslösemechanismus (56) und dem Anschlagelement (54), um die Schwenkbewegung der Sitzrückenlehne (12) nach vorne in der nach vorne gelegten Position festzuhalten, und einer eingezogenen Position, die die Schwenkbewegung der Sitzrückenlehne (12) nach vorne in die flachgelegte Position ermöglicht, beweglich ist.

2. Sitzanordnung (10) nach Anspruch 1, wobei der Auslösemechanismus (56) als Antwort auf das Schwenken der Sitzrückenlehne (12) in die nach vorne gelegte Position aus einer ersten Position, die bezüglich des Winkels vom Anschlagelement (54) beabstandet ist, in eine zweite Position, die bezüglich des Winkels auf das Anschlagelement (54) ausgerichtet ist, schwenkt.

3. Sitzanordnung (10) nach Anspruch 1 oder 2, wobei die Führungsanordnung (58) ein Führungsfreigabesystem (64), um die Führungsanordnung (58) zwischen dem verriegelten Zustand und dem entriegelten Zustand zu betätigen, enthält, wobei der Auslösemechanismus (56) und das Führungsfreigabesystem (64) mit einem ersten Seil (78) betriebstechnisch miteinander gekoppelt sind.

4. Sitzanordnung (10) nach einem der Ansprüche 1 bis 3, wobei die Sitzrückenlehne (12) zwischen den mehreren geneigten Sitzpositionen und einer flachgelegten Position, in der sie das Sitzpolster (14) überlagert, schwenkt, wobei die nach vorne gelegte Position bezüglich des Winkels zwischen den mehreren geneigten Sitzpositionen und der flachgelegten Position angeordnet ist.

5. Sitzanordnung (10) nach einem der Ansprüche 1 bis 4, wobei die Lehnenverstellungsanordnung (30) eine Scheibenlehnenverstellung (40) enthält, die eine Lehnenverstellungswelle (42) aufweist, wobei die Drehung der Lehnenverstellungswelle (42) die Scheibenlehnenverstellung (40) zwischen einer verriegelten Konfiguration, die die Sitzrückenlehne (12) in Bezug auf das Sitzpolster (14) arretiert, und einer entriegelten Konfiguration, die die Schwenkbewegung der Sitzrückenlehne (12) ermöglicht, betätigt.

6. Sitzanordnung (10) nach Anspruch 5, die einen Lehnenverstellungshebel (36), der an der Lehnenverstellungswelle (42) arretiert befestigt ist, einen Lehnenverstellungsgriff (34), der mit der Lehnenverstellungswelle (42) schwenkbar gekoppelt ist und während der Drehung des Lehnenverstellungsgriffs (34) in einer ersten Richtung mit dem Lehnenverstellungshebel (36) in Eingriff gebracht werden kann, um die Scheibenlehnenverstellung (40) in den entriegelten Zustand zu betätigen, und einen Freigabehebel (32), der mit der Lehnenverstellungswelle (42) schwenkbar gekoppelt ist und während der Drehung des Freigabehebels (32) in der ersten Richtung unabhängig vom Lehnenverstellungsgriff (34) mit dem Lehnenverstellungshebel (36) in Eingriff gebracht werden kann, um die Scheibenlehnenverstellung (40) in den entriegelten Zustand zu betätigen, enthält.

7. Sitzanordnung (10) nach Anspruch 6, die einen Freigabegriff (52) enthält, der an der Sitzanordnung (10) angebracht ist und mit dem Freigabehebel (32) und dem Bolzen (82) betriebstechnisch gekoppelt ist, wobei die Bedienung des Freigabegriffs (52) den Freigabehebel (32) in der ersten Richtung dreht, um die Scheibenlehnenverstellung (40) in den entriegelten Zustand zu betätigen, was die Schenkbewegung der Sitzrückenlehne (12) nach vorne ermöglicht und gleichzeitig den Bolzen (82) aus der eingezogenen Position in die ausgefahrene Position bewegt, um mit dem Auslösemechanismus (56) in Eingriff zu gelangen, um den Auslösemechanismus (56) und das Anschlagelement (54) derart zu betätigen, dass sie die Schwenkbewegung der Sitzrückenlehne (12) nach vorne in der nach vorne gelegten Position festhalten.

8. Sitzanordnung (10) nach Anspruch 7, die ein zweites Seil (94) enthält, das den Lehnenverstellungsgriff (34) und den Bolzen (82) betriebstechnisch koppelt, wobei die Drehung des Lehnenverstellungsgriffs (34) in der ersten Richtung den Bolzen (82) aus der ausgefahrenen Position in die eingezogene Position bewegt, um die Schwenkbewegung der Sitzrückenlehne (12) nach vorne in die flachgelegte Position zu ermöglichen.

9. Sitzanordnung (10) nach Anspruch 8, die ein drittes Seil (50), das den Freigabegriff (52) und den Freigabehebel (32) betriebstechnisch koppelt, und ein viertes Seil (96), das den Freigabegriff (52) und den Bolzen (82) betriebstechnisch koppelt, enthält.

10. Sitzanordnung (10) nach Anspruch 9, wobei der Bolzenmechanismus (80) ein Gehäuse (84) enthält, das an der Sitzrückenlehne (12) arretiert befestigt ist, wobei das Gehäuse (84) auf gegenüberliegenden Seiten davon einen ersten und einen zweiten Schlitz

(86, 88) aufweist, wobei der Bolzen (82) im Gehäuse (84) gleitend angeordnet ist und zwischen der ausgefahrenen und der eingezogenen Position beweglich ist.

11. Sitzanordnung (10) nach Anspruch 10, wobei das zweite Seil (94) durch den ersten Schlitz (86) mit dem Bolzen (82) gekoppelt ist und das vierte Seil (96) durch den zweiten Schlitz (88) mit dem Bolzen (82) gekoppelt ist.

Revendications

1. Ensemble formant siège (10) pour supporter un occupant au-dessus d'un plancher (16) dans un véhicule automobile, l'ensemble formant siège (10) comprenant :

un coussin de siège (14) ;
un dossier de siège (12) couplé au coussin de siège (14) de manière à permettre un mouvement de pivotement par rapport au coussin de siège (14) entre une pluralité de positions d'assise inclinées et une position rabattue à plat recouvrant le coussin de siège (14) ;
un ensemble d'inclinaison (30) couplé fonctionnellement entre le dossier de siège (12) et le coussin de siège (14), l'ensemble d'inclinaison (30) commandant le mouvement de pivotement du dossier de siège (12) par rapport au coussin de siège (14) ;
un ensemble formant glissière (58) adapté à être monté sur le plancher (16) et couplé au coussin de siège (14), l'ensemble formant glissière (58) pouvant être actionné entre un état verrouillé et un état déverrouillé permettant un mouvement vers l'avant et vers l'arrière de l'ensemble formant siège (10) ;
un mécanisme de déclenchement (56) couplé à pivotement au coussin de siège (14) et couplé fonctionnellement à l'ensemble formant glissière (58), le dossier de siège (12) actionnant le mécanisme de déclenchement (56) pour libérer l'ensemble formant glissière (58) de l'état verrouillé à l'état déverrouillé en réponse au pivotement du dossier de siège (12) vers la position rabattue vers l'avant, l'actionnement de l'ensemble formant glissière (58) vers l'état déverrouillé sollicitant l'ensemble formant siège (10) vers une position avant ;
un élément d'arrêt (54) solidarisé au coussin de siège (14), l'élément d'arrêt (54) coopérant avec le dossier de siège (12) pour limiter le mouvement de pivotement vers l'avant du dossier de siège (12), définissant ainsi une position rabattue vers l'avant entre la pluralité de positions d'assise inclinées et la position rabattue à plat, et
un mécanisme à broche (80) comportant une broche (82) couplée à coulissement au dossier de siège (12), la broche (82) pouvant être déplacée entre une position déployée pour coopérer sélectivement avec le mécanisme de déclenchement (56) et l'élément d'arrêt (54) afin d'arrêter le mouvement de pivotement vers l'avant du dossier de siège (12) dans la position rabattue vers l'avant et une position rétractée permettant le mouvement de pivotement vers l'avant du dossier de siège (12) vers la position rabattue à plat.

2. Ensemble formant siège (10) selon la revendication 1, dans lequel le mécanisme de déclenchement (56) pivote d'une première position espacée angulairement de l'élément d'arrêt (54) vers une seconde position alignée angulairement avec l'élément d'arrêt (54) en réponse au pivotement du dossier de siège (12) vers la position rabattue vers l'avant.

3. Ensemble formant siège (10) selon la revendication 1 ou 2, dans lequel l'ensemble formant glissière (58) inclut un système de libération de glissière (64) pour actionner l'ensemble formant glissière (58) entre les états verrouillé et déverrouillé, le mécanisme de déclenchement (56) et le système de libération de glissière (64) étant couplés fonctionnellement ensemble avec un premier câble (78).

4. Ensemble formant siège (10) selon l'une quelconque des revendications 1 à 3, dans lequel le dossier de siège (12) pivote entre la pluralité de positions d'assise inclinées et une position rabattue à plat recouvrant le coussin de siège (14), la position rabattue vers l'avant étant disposée angulairement entre la pluralité de positions d'assise inclinées et la position rabattue à plat.

5. Ensemble formant siège (10) selon l'une quelconque des revendications 1 à 4, dans lequel l'ensemble d'inclinaison (30) inclut un mécanisme d'inclinaison à disque (40) comportant un arbre d'inclinaison (42), dans lequel la rotation de l'arbre d'inclinaison (42) actionne le mécanisme d'inclinaison à disque (40) entre une configuration verrouillée fixant le dossier de siège (12) par rapport au coussin de siège (14) et une configuration déverrouillée permettant le mouvement de pivotement du dossier de siège (12).

6. Ensemble formant siège (10) selon la revendication 5, incluant un levier d'inclinaison (36) solidarisé à l'arbre d'inclinaison (42), une poignée d'inclinaison (34) couplée à pivotement à l'arbre d'inclinaison (42) et pouvant être mise en prise avec le levier d'inclinaison (36) pendant la rotation de la poignée d'inclinaison (34) dans une première direction pour actionner le mécanisme d'inclinaison à disque (40) vers

l'état déverrouillé et un levier de libération (32) couplé à pivotement à l'arbre d'inclinaison (42) et pouvant être mis en prise avec le levier d'inclinaison (36) indépendamment de la poignée d'inclinaison (34) pendant la rotation du levier de libération (32) dans la première direction pour actionner le mécanisme d'inclinaison à disque (40) vers l'état déverrouillé.

7. Ensemble formant siège (10) selon la revendication 6, incluant une poignée de libération (52) montée sur l'ensemble formant siège (10) et couplée fonctionnellement au levier de libération (32) et à la broche (82), dans lequel l'actionnement de la poignée de libération (52) fait tourner le levier de libération (32) dans la première direction pour actionner le mécanisme d'inclinaison à disque (40) vers l'état déverrouillé permettant le mouvement de pivotement vers l'avant du dossier de siège (12) et déplace simultanément la broche (82) de la position rétractée vers la position déployée où elle coopère avec le mécanisme de déclenchement (56) pour actionner le mécanisme de déclenchement (56) et l'élément d'arrêt (54) afin d'arrêter le mouvement de pivotement vers l'avant du dossier de siège (12) dans la position rabattue vers l'avant.

8. Ensemble formant siège (10) selon la revendication 7, incluant un deuxième câble (94) couplant fonctionnellement la poignée d'inclinaison (34) et la broche (82), dans lequel la rotation de la poignée d'inclinaison (34) dans la première direction déplace la broche (82) de la position déployée vers la position rétractée pour permettre le mouvement de pivotement vers l'avant du dossier de siège (12) vers la position rabattue à plat.

9. Ensemble formant siège (10) selon la revendication 8, incluant un troisième câble (50) couplant fonctionnellement la poignée de libération (52) et le levier de libération (32) et un quatrième câble (96) couplant fonctionnellement la poignée de libération (52) et la broche (82).

10. Ensemble formant siège (10) selon la revendication 9, dans lequel le mécanisme à broche (80) inclut un boîtier (84) solidarisé au dossier de siège (12), le boîtier (84) comportant des première et deuxième fentes (86, 88) sur des côtés opposés de celui-ci, la broche (82) étant disposée à coulissement dans le boîtier (84) et étant déplaçable entre les positions déployée et rétractée.

11. Ensemble formant siège (10) selon la revendication 10, dans lequel le deuxième câble (94) est couplé à la broche (82) à travers la première fente (86) et le quatrième câble (96) est couplé à la broche (82) à travers la deuxième fente (88).

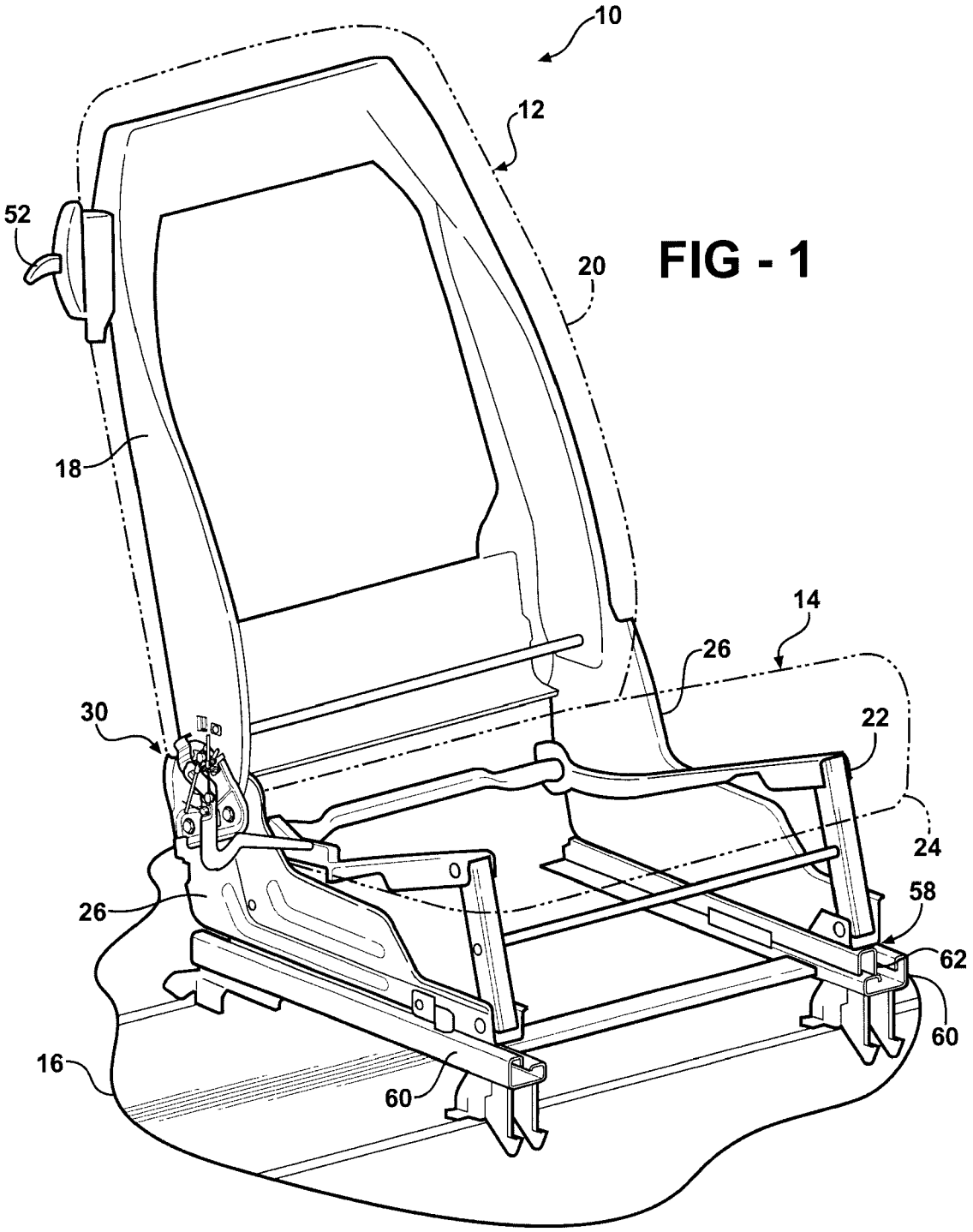

FIG - 1

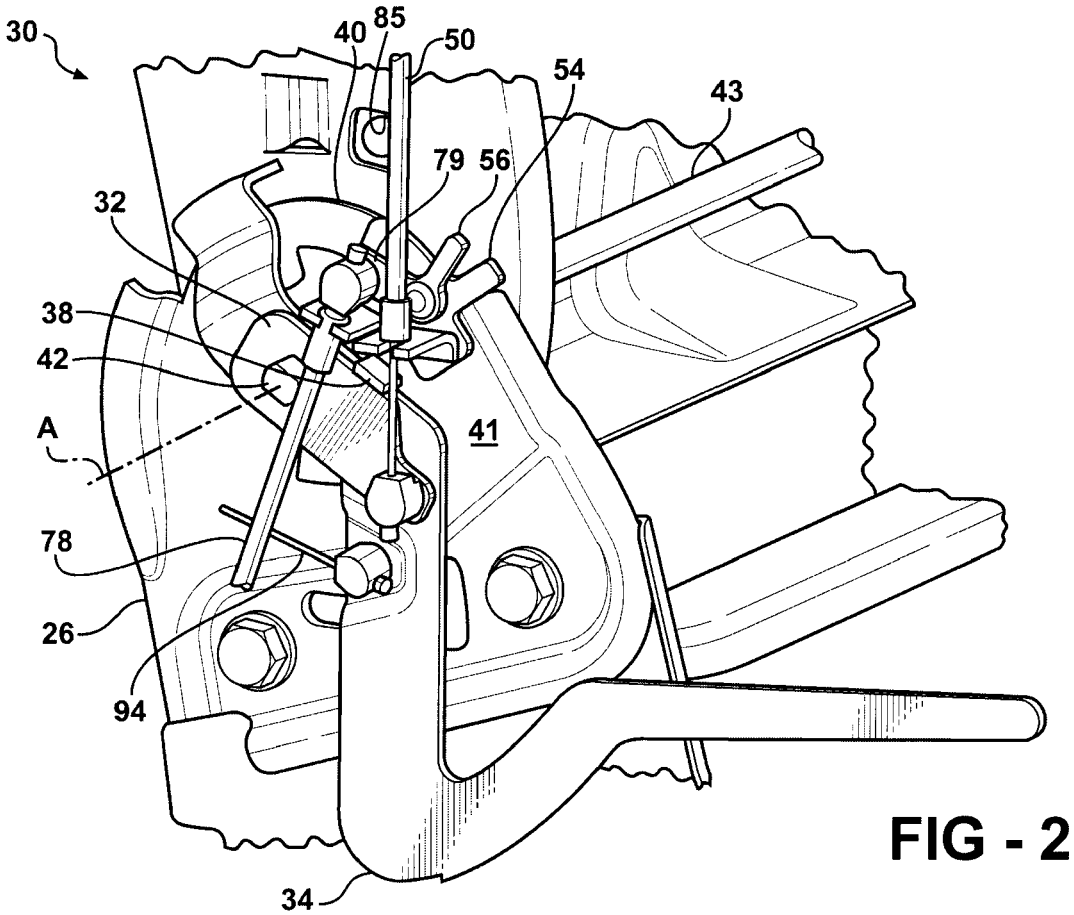
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FIG - 2

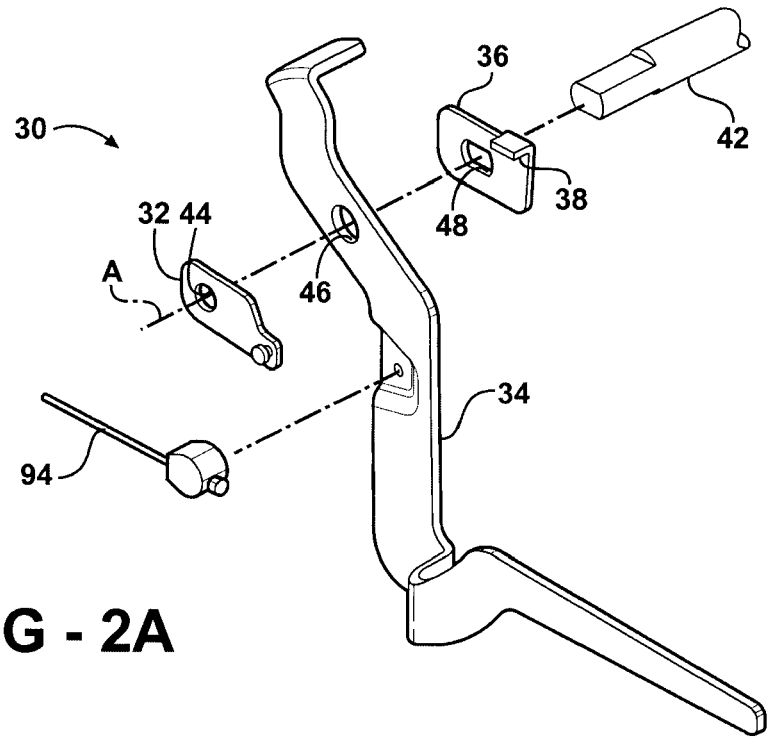
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FIG - 2A

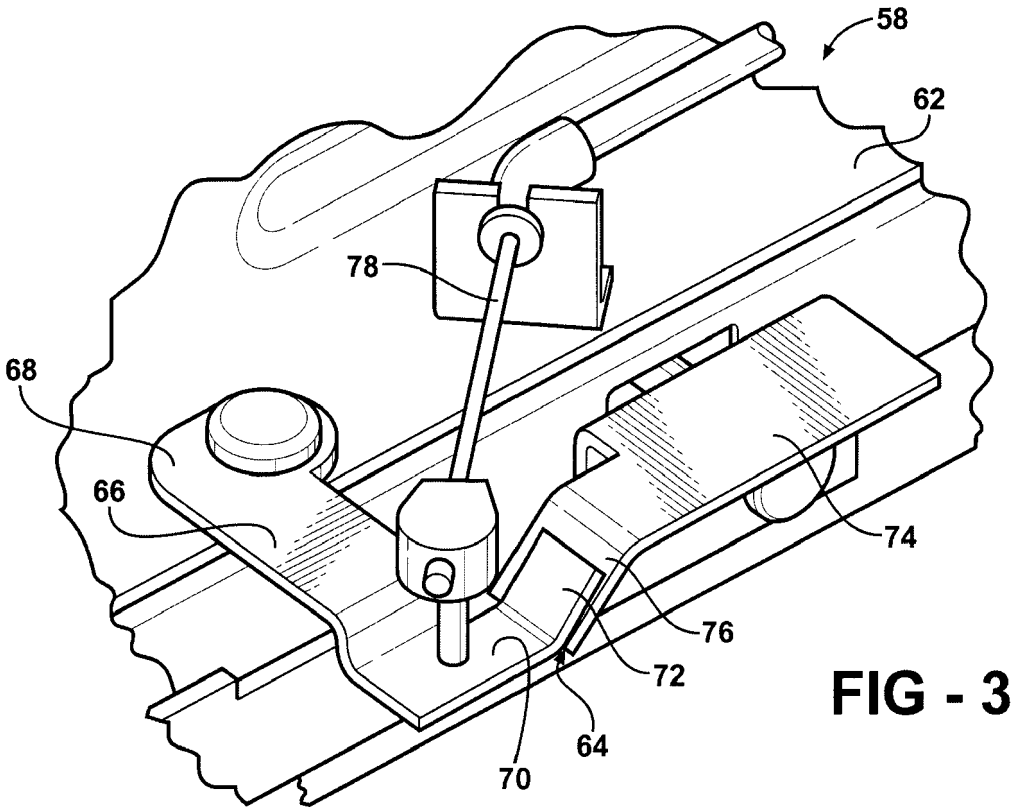

FIG - 3

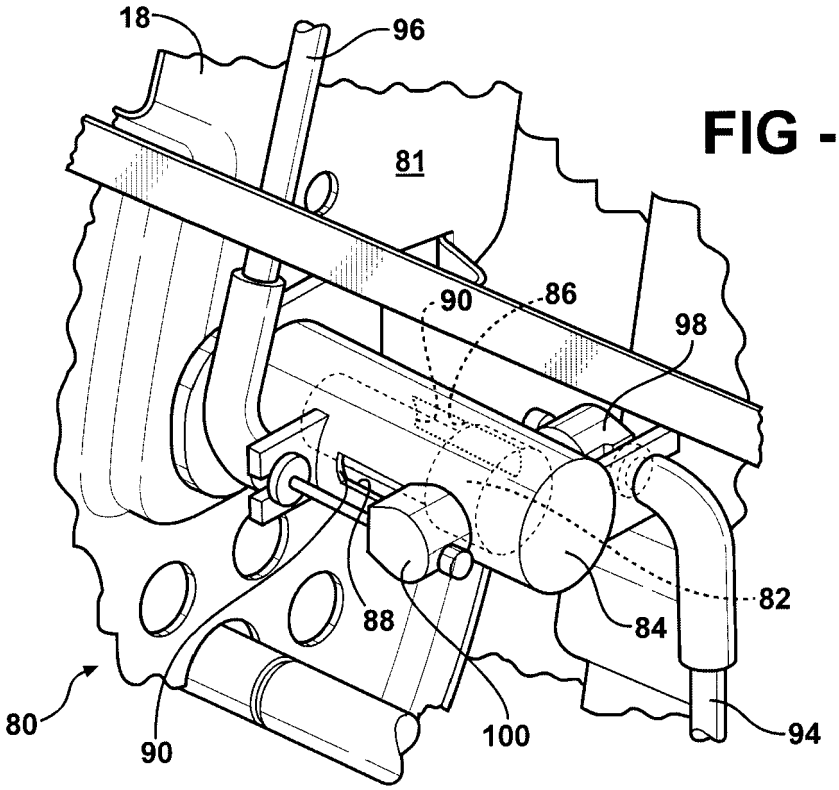
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FIG - 4

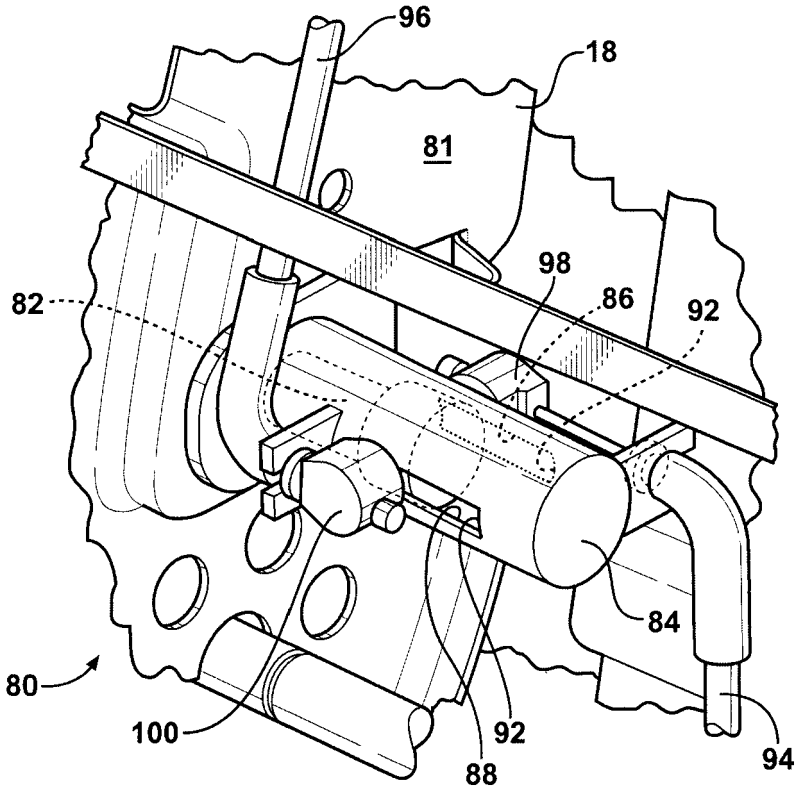
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FIG - 5

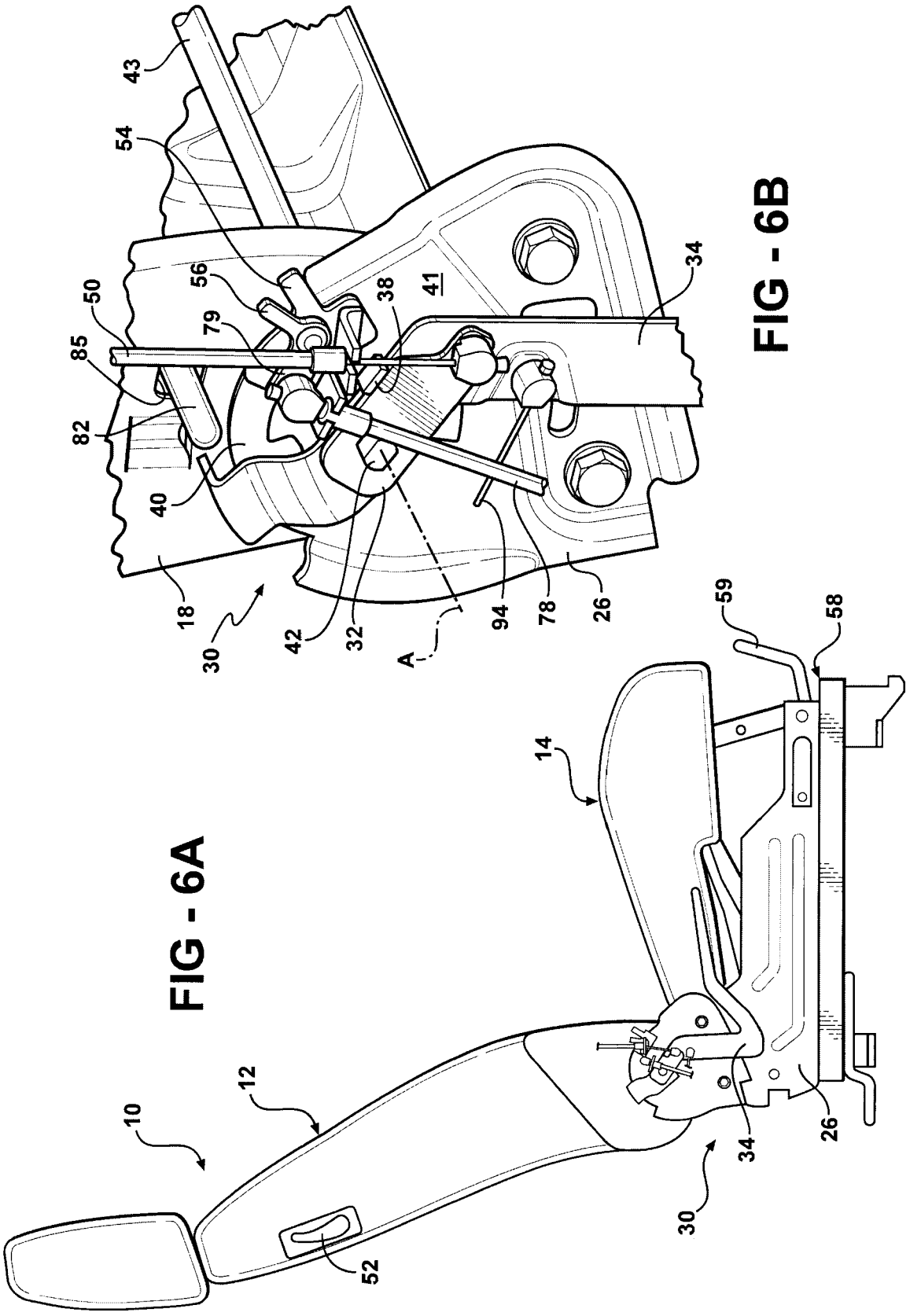
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FIG - 6A

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FIG - 6B

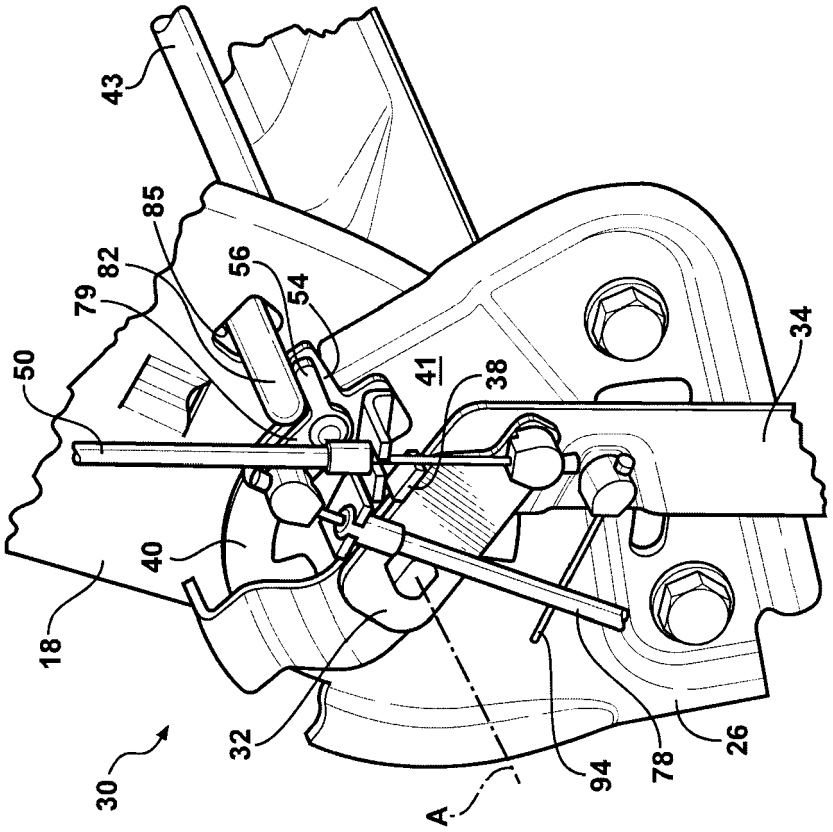
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FIG - 7B

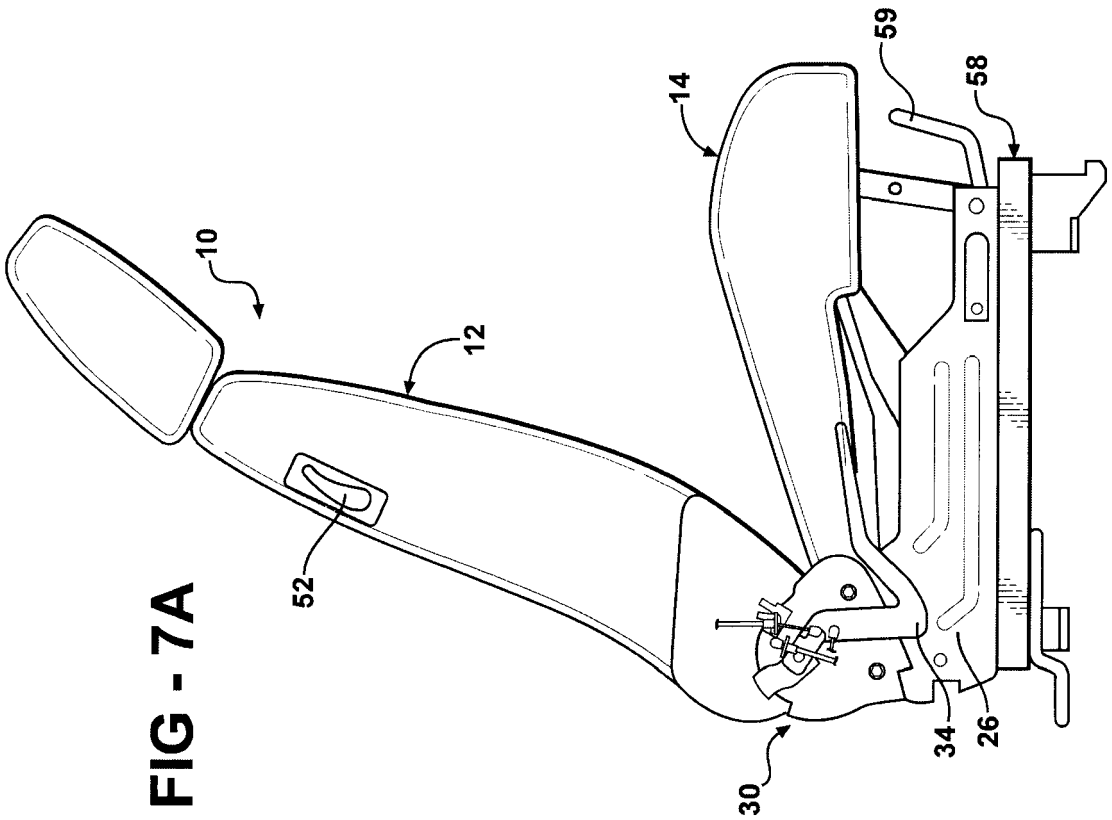
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FIG - 7A

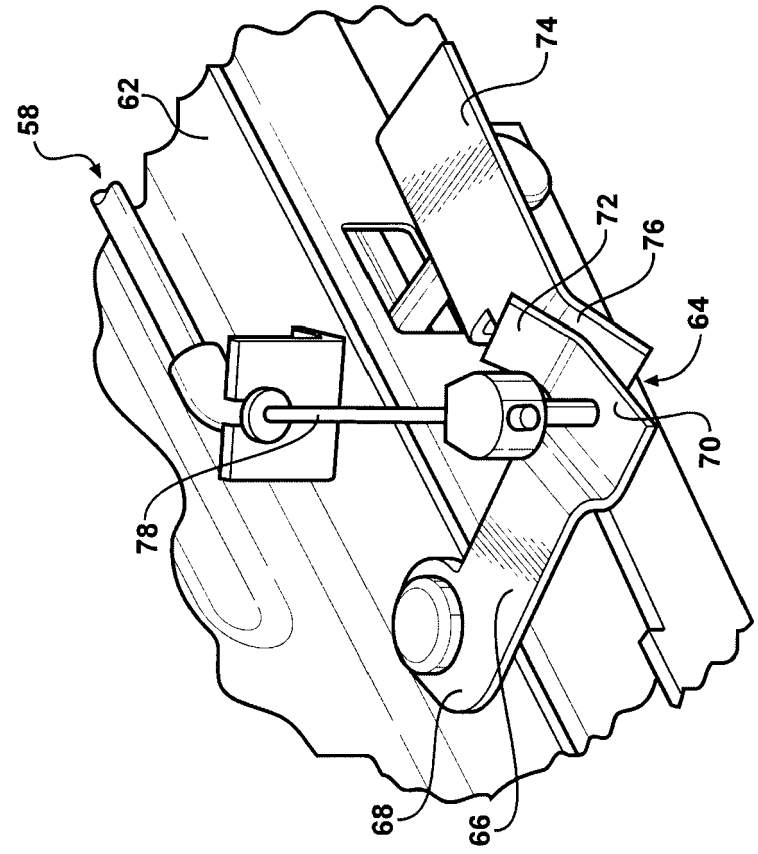

FIG - 8B

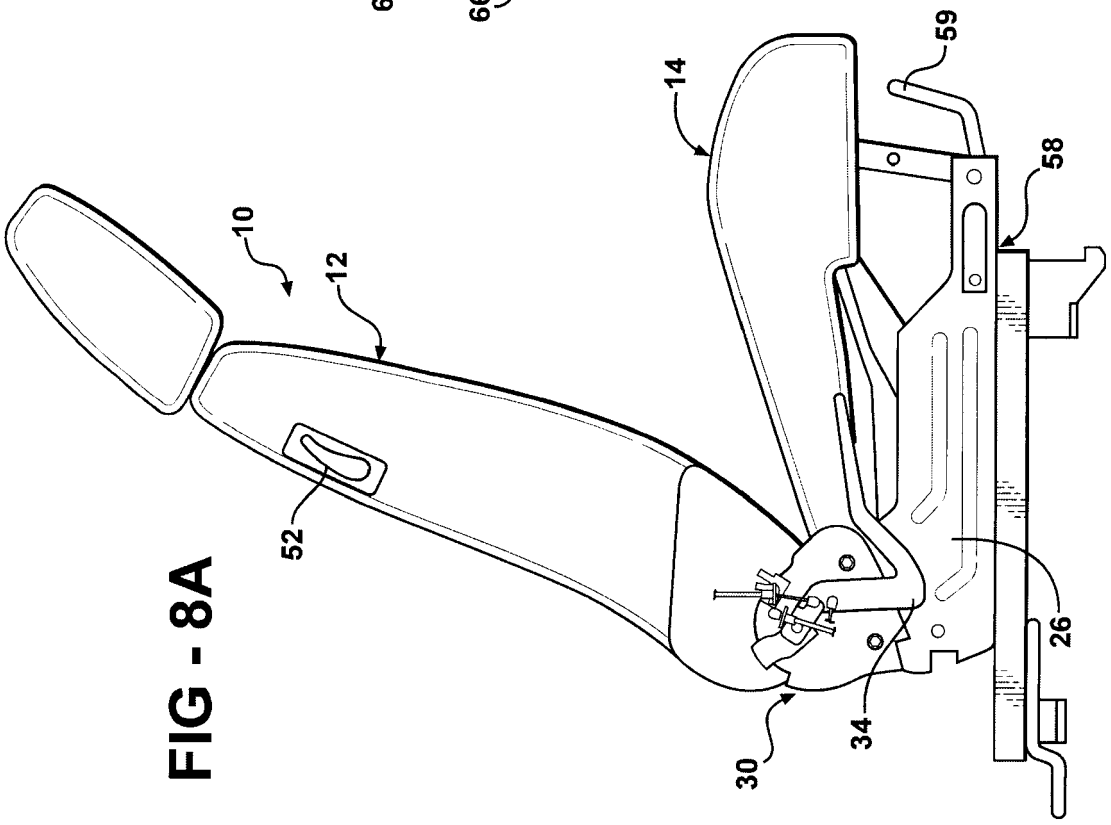

FIG - 8A

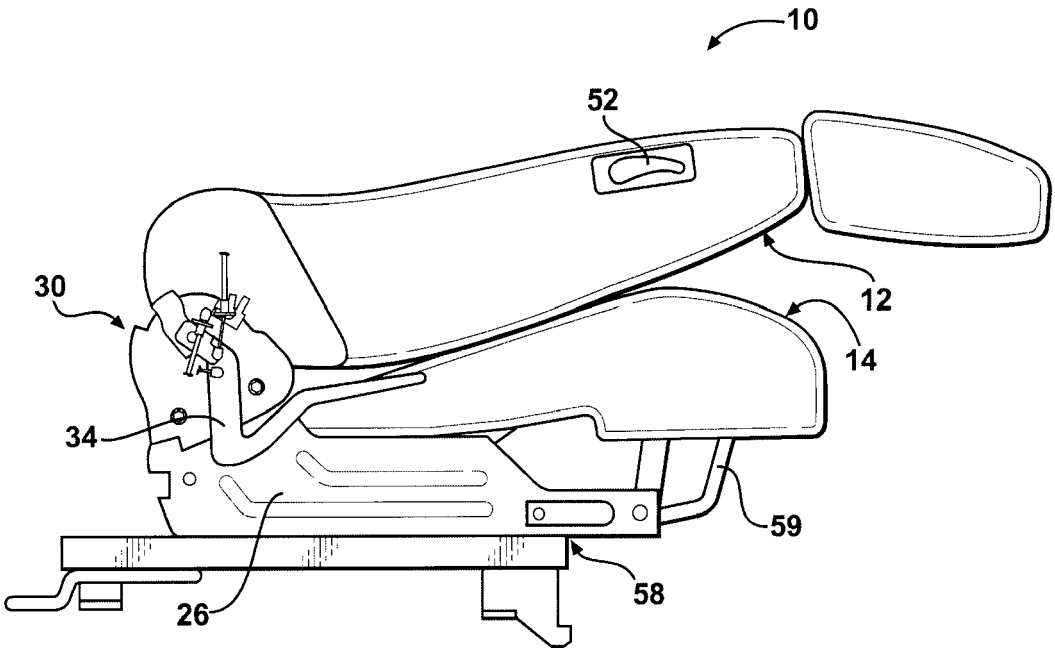

FIG - 9

REFERENCES CITED IN THE DESCRIPTION

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- US 6736461 B2 **[0004]**