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(54) **VEHICLE SEAT, IN PARTICULAR A MOTOR VEHICLE SEAT**

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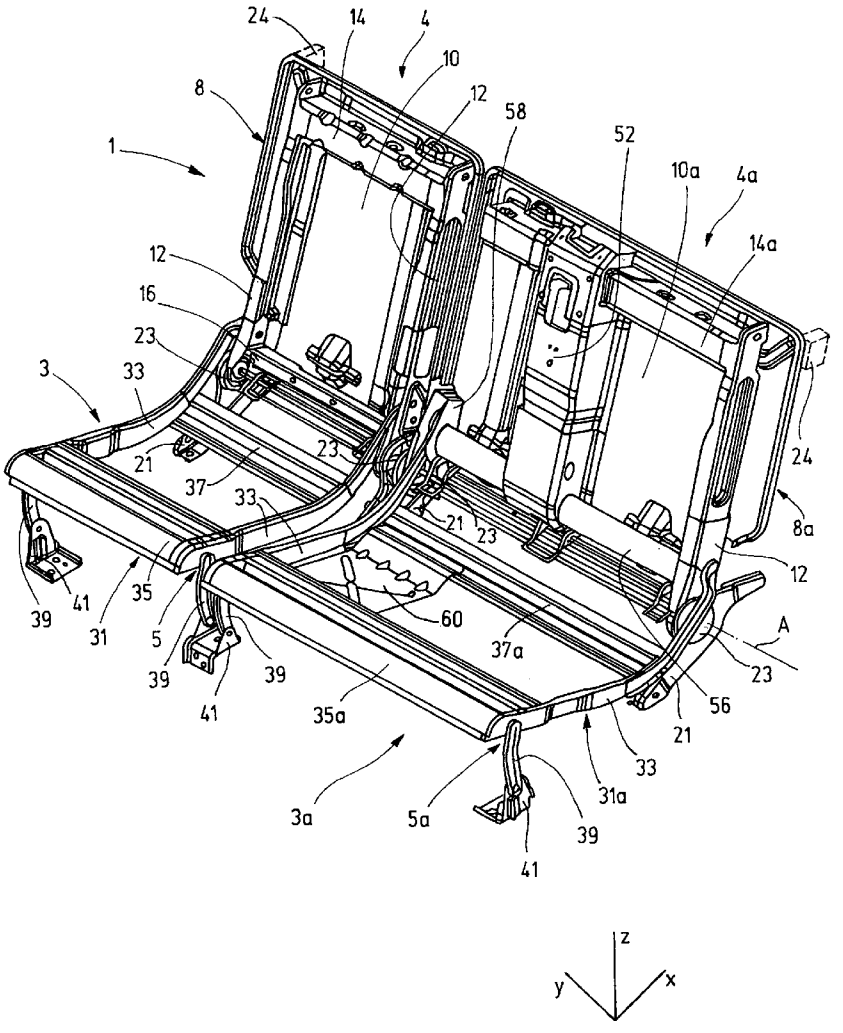
(57) **ABSTRACT**

A vehicle seat (**1**), in particular a motor vehicle seat, with at least one seat component (**3**, **3***a*) and at least one backrest (**4**, **4***a*) that can pivot relative to the seat component (**3**, **3***a*) around an axis (A), and whose backrest structure (**8**) is hinged on both sides on the seat component structure (**5**, **5***a*) of the seat component (**3**, **3***a*), and comprising at least one base metal sheet (**10**, **10***a*), at least one side beam (**12**) or side beam stub (**58**), and at least one upper transverse beam (**14**, **14***a*) that are connected to each other, in which the backrest structure (**8**, **8***a*) can be locked in the case of identical dimensioning according to choice by way of at least one fitting (**23**) in the region of the axis (A) or a backrest lock (**24**) on the upper end of the backrest (**4**, **4***a*).



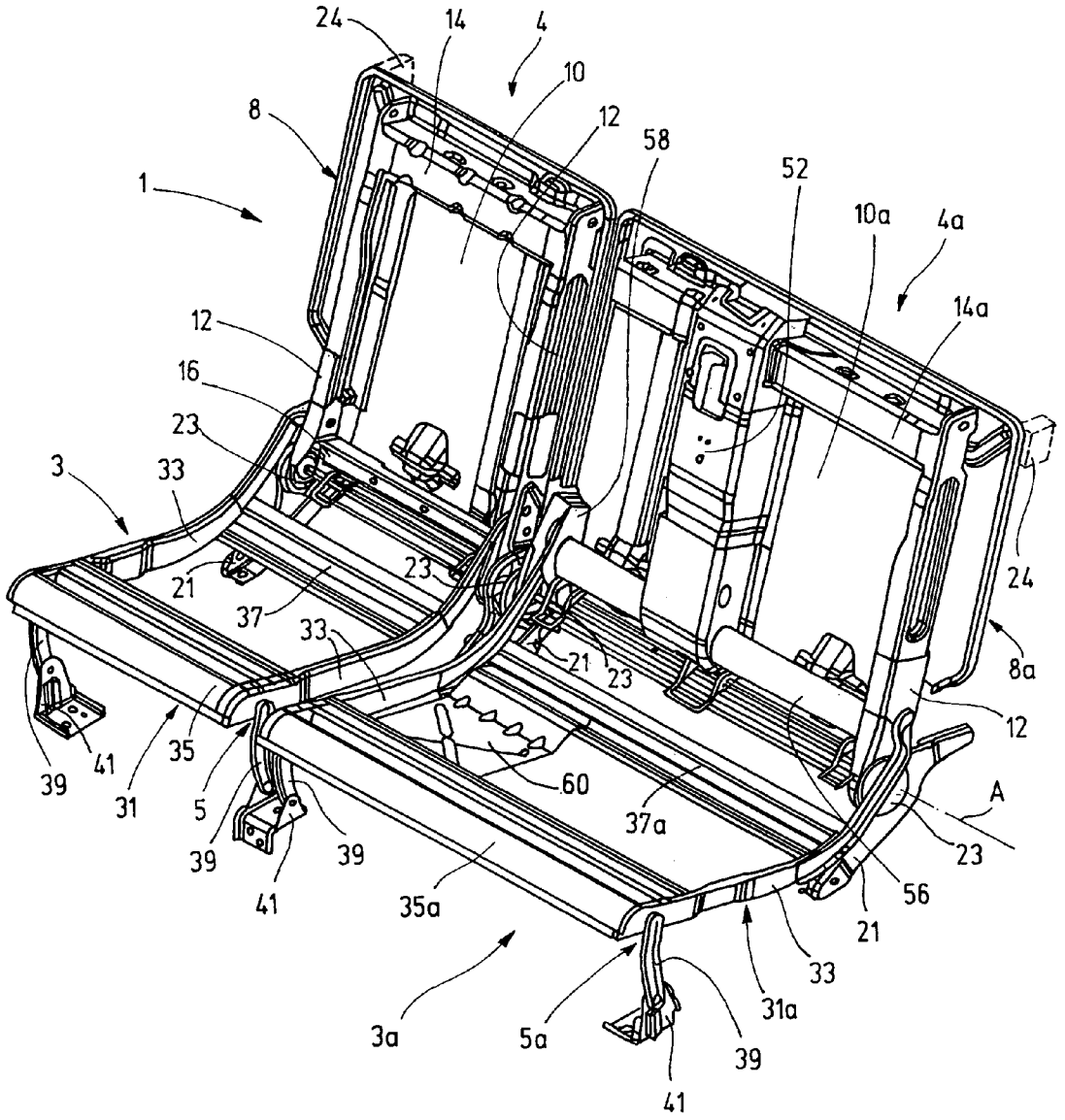

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Fig.1

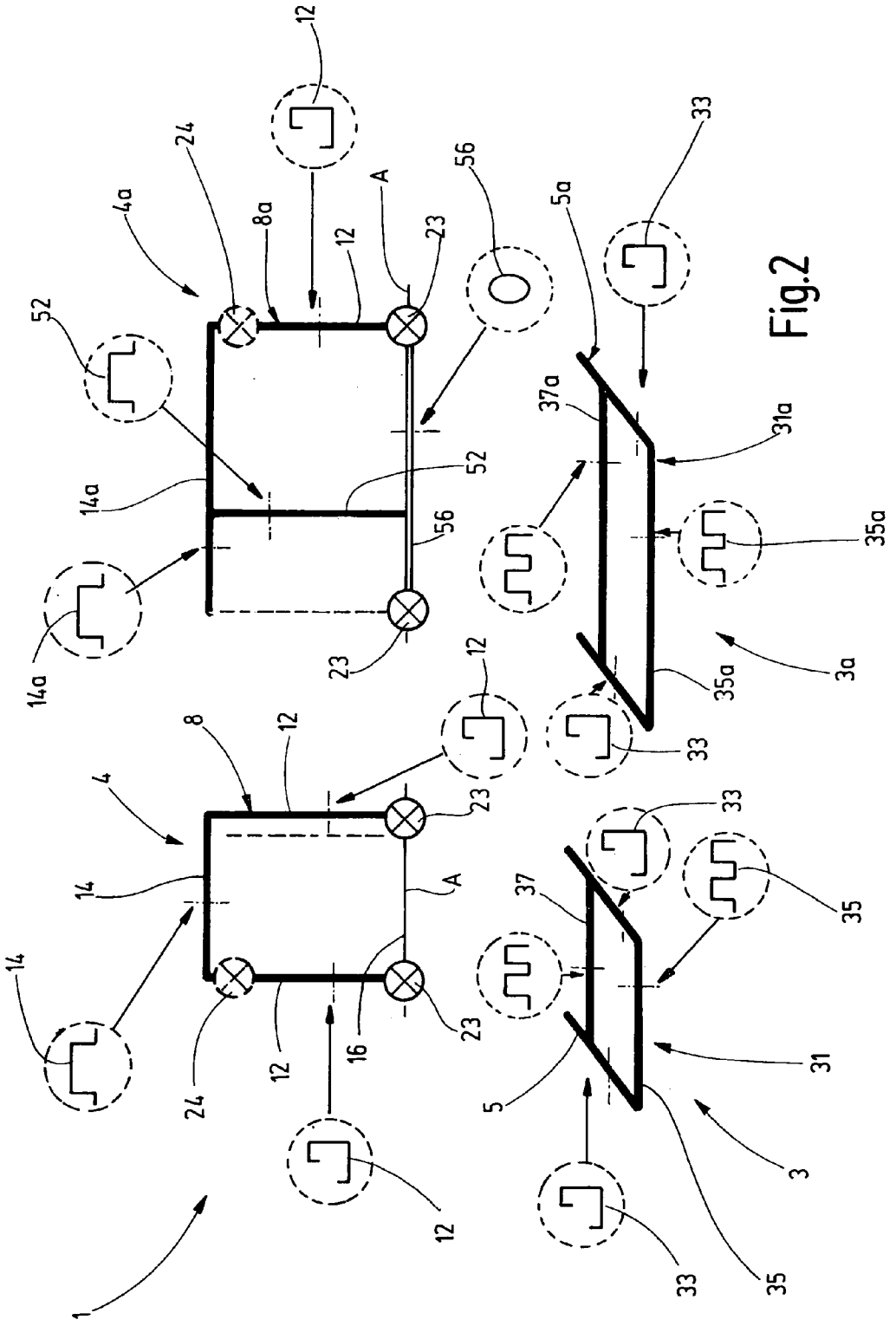

Fig.2

VEHICLE SEAT, IN PARTICULAR A MOTOR VEHICLE SEAT

PRIOR FOREIGN APPLICATION

[0001] The present application claims priority to DE 10 2007 007 296.3, which was filed Feb. 12, 2007. The entire disclosure of DE 10 2007 007 296.3 is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention relates to a vehicle seat, in particular a motor vehicle seat, having at least one seat component and at least one backrest that can pivot relative to the seat component around an axis, wherein the backrest structure of the backrest is on both sides pivotably connected to the seat component structure of the seat component, and the backrest structure comprises at least one base metal sheet, at least one side beam or side beam stub, and at least one upper transverse beam that are connected to each other.

BACKGROUND OF THE INVENTION

[0003] Generally described, it is known for a vehicle seat to be formed by way of a modular system. For example, DE 101 42 981 A1 and U.S. Pat. No. 6,802,124 B2 disclose a vehicle seat formed by way of modular system, wherein different backrest structures, in particular with different widths, are created with a different arrangement of otherwise identical beams.

BRIEF SUMMARY OF SOME ASPECTS OF THE INVENTION

[0004] An aspect of the present invention is the provision of improvements to a vehicle seat of the type mentioned in the above Technical Field section of this disclosure.

[0005] In accordance with one aspect of the present invention, a vehicle seat, in particular a motor vehicle seat, includes at least one seat component and at least one backrest that may be pivoted relative to the seat component about an axis. The backrest structure typically includes at least one base metal sheet, at least one side beam component (e.g., at least one side beam or side beam stub), and at least one upper transverse beam that are connected to one another. In accordance with one aspect of the present invention, the backrest structure is configured so that: (1) the backrest structure is suitable for being locked by a backrest lock proximate an upper end of the backrest (i.e., the backrest lock is not required to be present) and (2) the backrest structure is suitable for being locked by a lockable fitting that is proximate the axis (i.e., the lockable fitting is not required to be present). That is, a choice may be made to provide at least one fitting, which is capable of locking the backrest structure, in the region of the axis, or to provide a backrest lock on the upper end of the backrest for locking the backrest structure. In accordance with one aspect of the present invention, that choice may be made without requiring a change in the backrest structure.

[0006] In accordance with an exemplary embodiment of the present invention, the vehicle seat has, in its backrest structure and seat component structure, a load control system. The load control system preferably is formed by a special arrangement of components that have particular profiles (e.g., cross-sectional shapes, with the cross-sections respectively taken perpendicular to the lengths of the components), and the components are respectively connected to one another, preferably by laser welding. This load control system can be combined—in the same design—with fittings or C-pillar locks (i.e., so-called back locks for locking the backrest to the C-pillar of an automobile), i.e., the introduced loads are transferred in an advantageous manner irrespective of the locking type and the locking location. In the case that the same load is introduced into the load control system, a different load transmission can be provided according to the locking location (i.e., fixed points in the load control system).

[0007] The profiles of the individual components are optimized with respect to loads such as linear compression, stretching, bending, and twisting. The chosen construction withstands both load transmissions respectively created due to the different fixed points (e.g., due to the different locking locations). Because of the modularity of the components, the load control system can be adapted to arbitrary specific requirements of a vehicle, such as the respective load level, for example, with respect to length, width, height, and material strength. For example, different widths may be conveniently provided by roll forming the components and respectively cutting to different lengths. The modular structures can be used for the second or the third row of seats, for free standing backrests, or for those that are locked to a C-pillar.

[0008] Other aspects and advantages of the present invention will become apparent from the following.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention is further explained in the following with reference to an exemplary embodiment shown in the drawings.

[0010] FIG. **1** is a perspective view of the exemplary embodiment without cushioning, wherein backrest locks, which may be present instead of the fittings for alternative locking, are schematically shown by dashed lines.

[0011] FIG. **2** is a schematic representation of the exemplary embodiment showing the profiles of the individual components.

DETAILED DESCRIPTION

[0012] A vehicle seat **1** that is constructed as a multiple-part backseat system of a motor vehicle, and a method for manufacturing the vehicle seat, are described in the following, in accordance with an exemplary embodiment of the present invention. The longitudinal direction of the vehicle seat **1**, which extends in the normal direction of travel of the motor vehicle, is denoted by x. The horizontal transverse direction of the vehicle seat **1**, which is perpendicular to the longitudinal direction x, is denoted by y. The vehicle seat **1** has next to each other, in the transverse direction y, two seat components **3** and **3***a*. The seat components **3**, **3***a* are designed to fulfill the same function as one another and differ mainly in their dimensions in the transverse direction y. In the following, first the narrower seat component **3** of the two seat components **3**, **3***a* and the narrower backrest **4** of the two backrests **4**, **4***a* are described. The longitudinal direction x, the transverse direction y, and the vertical direction z, which is perpendicular to the longitudinal and transverse directions x, y, define the directional frame of reference used in this disclosure.

[0013] The seat component **3** has a seat component structure **5**, and the backrest **4**, which is pivotable relative to the seat component **3**, has a backrest structure **8**. The backrest structure **8** comprises a base metal sheet **10** and four beams. The base metal sheet **10** is attached to each of the four beams

of the backrest structure **8**. The four beams of the backrest structure **8** are attached to each other so that they together form a four-legged continuous frame. More specifically, the four beams of the backrest structure **8** are two side beam components, namely side beams **12**; and upper and lower transverse beams **14**, **16**, which are respectively above and below a central portion of the base metal sheet **10**.

[0014] In accordance with the exemplary embodiment, both of the side beams **12** have C-shaped profiles (e.g., cross-sections taken perpendicular to their lengths are C-shaped) and they are constructed as mirror-images of each other, and it may be preferred for them to be identical parts. A C-shaped profile is a configuration in which two spaced apart legs are connected to and extend perpendicularly from a middle leg, and optionally inwardly protruding flanges may be respectively connected to and extend perpendicularly from the two legs. Profiles that are different than those disclosed herein may be used. For example and as an alternative, the side beams **12** may have L-shaped profiles (e.g., cross-sections taken perpendicular to their lengths are L-shaped). In accordance with this alternative embodiment, an L-shaped profile is a configuration in which two legs are connected and extend perpendicular to each other, and optionally perpendicularly protruding flanges may be connected to the legs.

[0015] In accordance with the exemplary embodiment, the upper transverse beam **14** has a top hat-shaped profile (e.g., cross-sections taken perpendicular to its lengths are shaped like a top hat). A top hat-shaped profile is a configuration with a middle leg, two legs that are connected to and extend perpendicular from the middle leg, and, at least on one side, preferably (e.g., optionally) on both sides, there is an outwardly protruding, perpendicular flange. In accordance with the exemplary embodiment, the lower transverse beam **16** has a C-shaped profile. The profiles of the beams **12**, **14**, **16** (e.g., their cross-sectional shapes, with the cross-sections taken perpendicular to their lengths) can be formed, for example, by roll forming. For example, different heights of the backrest **4** may be conveniently provided by roll forming the side beams **12** and respectively cutting to different lengths. The upper transverse beam **14** contains receptacles for the head support rods of a head support (e.g., headrest).

[0016] On both sides, the backrest structure **8** is pivotably connected to two feet **21** of the seat component structure **5**, for pivoting around (e.g., about) axis A. The two feet **21** of the seat component structure **5** are structurally fixed in the vehicle (e.g., the feet **21** are for being fixedly connected to structure of the vehicle). The axis A extends in the transverse direction y. In accordance with one version of the exemplary embodiment, the backrest **4** is freestanding. According to this version, the sides of the backrest structure **8** are pivotably connected to the rear feet **21** by way of respective lockable fittings **23**, and the fittings are operative for both allowing the pivoting of the backrest structure about the axis A and (indirectly) locking the backrest structure with respect to the vehicle structure, so that the backrest structure is crash safe. Stated differently, the backrest structure **8** is releasably locked by the fittings **23** in a manner that seeks to prevent the backrest structure from unintentionally pivoting relative to the vehicle structure in the event of a crash. The fittings **23** may be any type of releasably lockable fittings (e.g., conventional releasably lockable fittings) that are suitable for functioning at least as described above. For example and not limitation, releasably lockable fittings that may be used are disclosed by U.S. Pat. No. 7,188,903 B2 and US 2007/0145800 A1. The entire disclosure of each of U.S. Pat. No. 7,188,903 B2 and US 2007/0145800 A1 is incorporated herein by reference.

[0017] In accordance with an alternative/second version of the exemplary embodiment, the sides of the backrest structure **8** are pivotably connected on the rear feet **21** by way of respective simple pivot joints, which are not per se (i.e., in and of themselves) lockable, and the backrest structure is releasably locked to the vehicle structure backrest lock **24**, which is schematically illustrated by dashed lines in FIG. **1**, so that the backrest structure is crash safe. Stated differently, the fittings **23** are replaced with the simple pivot joints and the backrest structure **8** is releasably locked by the backrest lock **24** in a manner that seeks to prevent the backrest structure from unintentionally pivoting relative to the vehicle structure in the event of a crash. The backrest lock **24** is provided—with respect to the vertical z—on the upper end of the backrest **4**. The simple pivot joints may be any type of simple pivot joints (e.g., conventional simple pivot joints) that are suitable for functioning as described above. As one example and not for purposes of limitation, each of the simple pivot joints may consist essentially of a shaft (e.g., a stub of a shaft) that is fixedly connected to and protrudes from the backrest structure **8**, and is pivotably carried by the respective rear foot **21** (e.g., by way of a bearing, or the like). Alternatively, the shaft may be fixedly connected to and protrude from the respective rear foot **21**, and be pivotably carried by the backrest structure **8** (e.g., by way of a bearing, or the like). One of ordinary skill in the art will understand that the fittings **23** can be characterized as being schematically illustrative of the simple pivot joints. The backrest lock **24** may be any type of backrest lock **24** (e.g., a conventional backrest lock **24**) that is suitable for functioning at least as described above. For example and not limitation, locks that may be suitable for use as the backrest lock **24** are disclosed by US 2007/0170341 A1 and US 2006/0208505 A1. The entire disclosure of each of US 2007/0170341 A1 and US 2006/0208505 A1 is incorporated herein by reference.

[0018] Combinations of both solutions (e.g., of the first and second versions discussed above) are also possible in which the backrest structure **8** is, for example, on one side hinged by way of a fitting **23** on the respective rear foot **21** and on the other side hinged by way of a simple pivot joint on the respective rear foot **21**. The dimensioning of the backrest structure **8**, i.e., the different dimensions such as the length, width, height, and location dependent material strength remain the same independent of the locking type and the locking location. The fittings **23** or simple pivot joints define the axis A. The position of axis A can be varied by selecting the rear feet **21** from a collection of differently sized and/or shaped rear feet.

[0019] The seat component structure **5** comprises a seat frame **31**. In accordance with the exemplary embodiment, the seat frame **31** has two side components **33**, which are mirror images of each other, a front cross-member **35** and a rear cross-member **37** that are connected to each other. The side components **33** have C-shaped profiles, whereas both the cross-members **35** and **37** have double top hat-shaped profiles (e.g., cross-sections taken perpendicular to their lengths have a double top hat-like shape). Alternatively, each of the double top hat-shaped profiles can be replaced with a closed profile (e.g., an elliptical or oval profile). The side components **33** extended over the rear cross-member **37** and are pivotably connected to the backrest structure **8** above the fittings **23** or the simple pivot joints. More specifically, the side components **33** are pivotably mounted to the side beams **12**. Addi-

tionally in accordance with the exemplary embodiment, on each side of the seat frame **31**, the side component **33** is pivotably connected to a pivotable link that may be referred to as a rocker arm **39**, and the rocker arm is in turn is pivotably connected to a front foot **41**. The front feet **41** are stationary in (e.g., for being fixedly mounted to) the vehicle structure.

[0020] On both sides of the seat component **3**, a four-bar linkage is formed, whereby there are two of these four-bar linkages. Each of these four-bar linkages is respectively formed by: the vehicle structure between the front and rear feet **41**, **21** and including the front and rear feet **41**, **21**; the backrest structure **8** between the fitting **23** or the simple pivot joint, on one hand, and the articulation point of the seat frame **31** on the backrest structure **8** (i.e., wherein the side component **33** is pivotably connected to the backrest structure **8** above the fitting **23** or the simple pivot joint), on the other hand; the side component **33**; and the rocker arm **39**. By way of these four-bar linkages that are respectively at the sides of the seat component **3**, the backrest **4** can be folded flat onto the seat component **3** and the seat frame **31** can be lowered at the same time, so that the vehicle seat **1** can be configured into a flat bottom position.

[0021] The previously described narrower part of the vehicle seat **1** makes one seat available for a user to sit in, whereas the wider part of the vehicle seat **1** that is described in the following has two seats available for users to sit in. The wider backrest **4***a* of the vehicle seat **1** has a backrest structure **8***a*. The backrest structure **8***a* comprises: a wider base metal sheet **10***a* (i.e., wider than the narrower base metal sheet **10** in the y direction); a side beam **12** that is located at the side of the wider backrest **4***a* that is distant from the narrower backrest **4**, and is identical to the side beams **12** of the narrower backrest **4**; a beam with an integrated safety belt ("beam with integrated safety belt **52**") that, rather than being centered in the backrest structure **8***a*, is arranged in the y direction closer to the narrower backrest **4** at a location that divides the base metal sheet **10***a* approximately in the ratio 20:40 in the y direction (along the axis A); an upper transverse beam **14***a* positioned above a central portion of the wider base metal sheet **10***a*; and a transverse tube **56** positioned below the central portion of the wider base metal sheet **10***a*. The side beam **12**, beam with integrated safety belt **52** and upper transverse beam **14***a* are directly connected to the base metal sheet **10***a*. The upper transverse beam **14***a* and the transverse tube **56** extend over nearly the total width of the base metal sheet **10***a* in the y direction, i.e., they have a larger size than the distance between the side beam **12** and the beam with integrated safety belt **52**. In the region between the side beam **12** and the beam with integrated belt **52**, the upper transverse beam **14***a*, transverse tube **56**, side beam **12** and the beam with integrated belt **52** are attached to each other so that they together form a four-legged continuous frame.

[0022] The beam with integrated safety belt **52** is designed to accommodate a belt retractor of a safety belt for the middle seat of the whole vehicle seat **1**; therefore, the beam with integrated safety belt **52** has a correspondingly large width. The upper transverse beam **14***a* contains receptacles for the head support rods of two head supports (e.g., headrests). The transverse tube **56** has an elliptical or oval profile (with a larger semi-axis parallel to the side beam **12** and the beam with integrated safety belt **52**, and a smaller semi-axis perpendicular to the base metal sheet **10***a*) in order to exhibit in different force directions different elasticity, namely stiffer with respect to forces introduced by the beam with integrated safety belt **52** and more elastic with respect to forces in the longitudinal direction x.

[0023] Like the narrower backrest **4**, the backrest structure **8***a* of the wider backrest **4***a* is pivotably mounted on respective rear feet **21** by way of fittings **23** or simple pivot joints. The rear feet **21** are structurally fixed in the vehicle (e.g., for being fixedly connected to structure of the vehicle). The backrest structure **8***a* of the wider backrest **4***a* has, on the side that is closest to the narrower backrest **4**, a side beam component, namely a side beam stub **58**. The side beam stub **58** is constructed like the lower part of a side beam **12**, for example, like the bottom quarter of a side beam **12**. The transverse tube **56** is attached to the side beam stub **58**. The side beam stub **58** is provided with one of the fittings **23** or one of the simple pivot joints. Except for the variations noted, the backrest structure **8***a* of the wider backrest **4***a* is constructed like the backrest structure **8** of the narrower backrest **4**. In particular, the backrest structure **8***a* can be locked with respect to the vehicle structure, at least indirectly, by way of the respective fittings **23** or a respective backrest lock **24**.

[0024] The wider seat component **3***a* of the vehicle seat **1** has a seat component structure **5***a* with a seat frame **31***a*. Side components **33** of the seat frame **31***a* are mirror images of each other and identical to the corresponding side components **33** of the narrower seat component **3**. A front cross-member **35***a* and rear cross-member **37***a* of the seat frame **31***a* are the same as the corresponding front cross-member **35** and rear cross-member **37** of the narrower seat component **3**, except that the front and rear cross-members **35***a*, **37***a* of the wider seat component **3***a* are longer than the front and rear cross-members **35**, **37** of the narrower seat component **3** in the y direction. Therefore, it is preferred for the front and rear cross-members **35***a*, **37***a* of the wider seat component **3***a* to be cut from the same precursor (e.g., an elongate roll-formed member with a C-shaped profile) as the front and rear cross-members **35**, **37** of the narrower seat component **3**.

[0025] The rear of the seat frame **31***a* is pivotably connected to the backrest structure **8***a*. More specifically, the rear of the side components **33** of the seat frame **31***a* are respectively pivotably connected to the side beam **12** and the side beam stub **58**. The front of the seat frame **31***a* is pivotably connected to the respective front feet **41** by way of rocker arms **39**. The rocker arms **39** and the front feet **41** of the wider seat component **3***a* are identical to the corresponding components of the narrower seat component **3**. A connection plate **60**, that is preferably provided with reinforcing beads, is attached to each of, and extends between, the cross-members **35***a* and **37***a* at the side of the wider seat component **3***a* that is closes to the narrower seat component **3**. Except for the variations noted, the seat component structure **5***a* of the wider seat component **3***a* is constructed like the seat component structure **5** of the narrower seat component **3**.

[0026] In the case of loading, in particular in the case of a crash of the vehicle containing the vehicle seat **1**, the individual components of the vehicle seat experience different primary loads. Thus, the cross-members **35** and **37** are subjected to bending, and the side components **33** are subjected to bending and linear compression/elongation. The upper transverse beams **14** and **14***a* are subjected to bending and twisting. In the case of a locking by way of the fittings **23**, the side beam **12** and the beam with integrated belt **52** are subjected to bending, and the transverse tube **56** is subjected to bending and twisting; whereas in the case of locking by way

of a backrest lock **24**, the side beam **12** and the beam with integrated safety belt **52** are subjected to bending and twisting, and the transverse tube **56** is subjected to bending.

[0027] One of ordinary skill in the art will understand that a variety of configurations are within the scope of the present invention. For example, although the fittings **23** and simple pivot joints are in some instances described above as being on the rear feet **21**, other arrangements are within the scope of the present invention. For example, for each of the wider and narrower parts of the vehicle seat **1**, the fittings **23** (according to one version) and the simple pivot joints (according to another version) may be mounted between/to both the backrest structure **8**, **8***a* and the seat frame **31**, **31***a*, such that the fittings **23** and simple pivot joints are not mounted directly on the rear feet **21**. For example, although the side components **33** are described above as being pivotably connected to the backrest structure **8**, **8***a* above the fittings **23** or the simple pivot joints, the side components **33** may alternatively be mounted, for example, to the fittings or the simple pivot joints.

[0028] It will be understood by those skilled in the art that while the present invention has been discussed above with reference to an exemplary embodiment and alternative embodiments, various additions, modifications and changes can be made thereto without departing from the spirit and scope of the invention as set forth in the following claims.

That which is claimed:

1. A vehicle seat, comprising:

at least one seat component including seat component structure; and

at least one backrest that includes backrest structure and can be pivoted relative to the seat component about an axis,

wherein the backrest structure includes opposite first and second sides, and the backrest structure is pivotably connected to the seat component structure at each of the first and second sides, and

wherein the backrest structure includes at least one base metal sheet, at least one side beam component, and at least one upper transverse beam that are connected to one another, with the backrest structure being configured so that

(a) the backrest structure is suitable for being locked by a backrest lock proximate an upper end of the backrest, and

(b) the backrest structure is suitable for being locked by a lockable fitting that is proximate the axis.

2. The vehicle seat according to claim **1**, wherein the side beam component has a profile selected from the group consisting of a C-shaped profile and an L-shaped profile.

3. The vehicle seat according to claim **1**, wherein the upper transverse beam has a top hat-shaped profile.

4. The vehicle seat according to claim **1**, wherein:

the side beam component is selected from the group consisting of a side beam stub and a first side beam;

the backrest structure further comprises

a second side beam,

a lower transverse component selected from the group consisting of a transverse beam and a transverse tube, and

a beam with integrated safety belt; and

the side beam component, the second side beam, the lower transverse component, the beam with integrated safety belt and the upper transverse beam are respectively connected to one another to form at least one four-legged continuous frame.

5. The vehicle seat according to claim **4**, wherein the beam with integrated safety belt has a top hat-shaped profile.

6. The vehicle seat according to claim **4**, wherein the transverse beam has a profile selected from the group consisting of an elliptical profile and an oval profile.

7. The vehicle seat according to claim **4**, wherein:

the side beam component is the side beam stub,

the lower transverse component is the transverse tube, and

the transverse tube extends between, and is connected to each of, the side beam and the side beam stub.

8. The vehicle seat according to claim **4**, wherein:

the side beam component is the first side beam, and

the first side beam and the second side beam are identical with respect to one another.

9. The vehicle seat according to claim **4**, wherein the beam with integrated safety belt is configured for accommodating a belt retractor of a safety belt.

10. The vehicle seat according claim **4**, wherein the beam with integrated belt divides the base metal sheet in a ratio of about 20:40 along the axis.

11. The vehicle seat according to claim **4**, wherein:

the axis extends in a direction;

the base metal sheet has a width that extends in the direction of the axis; and

the upper transverse beam and the lower transverse component extend along the axis over approximately the total width of the base metal sheet.

12. The vehicle seat according to claim **1**, comprising rear feet for being connected to the vehicle structure, wherein

the backrest is pivotable relative to the seat component about the axis by way of pivotable members,

the pivotable members are respectively mounted to the rear feet, and

a pivotable member of the pivotable members is selected from the group consisting of

the lockable fitting that is proximate the axis, and

a pivot joint.

13. The vehicle seat according to claim **1**, wherein:

the seat component structure comprises a seat frame;

the seat frame includes two side components, a front cross-member and a rear cross-member;

the side components, the front cross-member and the rear cross-member are respectively connected to one another; and

the side components are mirror images of one another.

14. The vehicle seat according to claim **13**, wherein at least one of the side components has a profile selected from the group consisting of a C-shaped profile and an L-shaped profile.

15. The vehicle seat according to claim **13**, wherein at least one cross-member, which is selected from the group consisting of the front cross-member and the rear cross-member, has a double top hat-shaped profile.

16. The vehicle seat according to claim **13**, wherein:

the seat frame has a rear region, and

the rear region of the seat frame is pivotably connected to the backrest structure, whereby the backrest structure is pivotably connected to the seat component structure.

17. The vehicle seat according to claim **13**, comprising front feet for being connected to the vehicle structure, and pivotable links respectively pivotably connected to the front feet, wherein:

the seat frame has a front region, and

the front region of the seat frame is pivotably connected to the pivotable links.

18. The vehicle seat according to claim **12**, comprising front feet for being connected to the vehicle structure, and pivotable links respectively pivotably connected to the front feet, wherein:

the seat frame has a front region;

the front region of the seat frame is pivotably connected to the pivotable links; and

at each of opposite first and second sides of the vehicle seat, a four-bar linkage is formed by

(a) the front foot, the rear foot, and the vehicle structure between the front foot and the rear foot,

(b) the backrest structure between

(1) where the backrest structure is pivotably connected to the seat component structure and

(2) the pivotable member that is mounted to the rear foot and the backrest structure,

(c) the side component, and

(d) the rocker arm.

19. The vehicle seat according to claim **1**, wherein:

an apparatus is selected from the group consisting of the seat component and the backrest;

the vehicle seat includes two of the apparatuses;

at least a first element of a first of the apparatuses is identical to at least a first element of a second of the apparatuses; and

the first elements are selected from the group consisting of side beams, side components, pivotable links, front feet and rear feet.

20. The vehicle seat according to claim **19**, wherein, along the axis, the first apparatus is sized differently than the second apparatus.

21. The vehicle seat according to claim **20**, wherein:

at least a second element of the first of the apparatuses has a profile that is identical to a profile of at least a second element of the second of the apparatuses;

the second elements are selected from the group consisting of transverse beams; transverse tubes, and cross-members; and

the second elements have different lengths with respect to one another.

22. A vehicle seat, comprising:

at least one seat component including seat component structure; and

at least one backrest that includes backrest structure and can be pivoted relative to the seat component about an axis,

wherein the backrest structure includes at least one base metal sheet, at least one side beam component, and at least one upper transverse beam that are connected to one another, with the backrest structure being configured so that

(a) the backrest structure is suitable for being locked by a backrest lock proximate an upper end of the backrest, and

(b) the backrest structure is suitable for being locked by a lockable fitting that is proximate the axis.

22. The vehicle seat according to claim **22**, including the lockable fitting, wherein the lockable fitting is proximate the axis and mounted to the backrest structure for at least partially the backrest structure to be pivoted relative to the seat component about the axis.

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