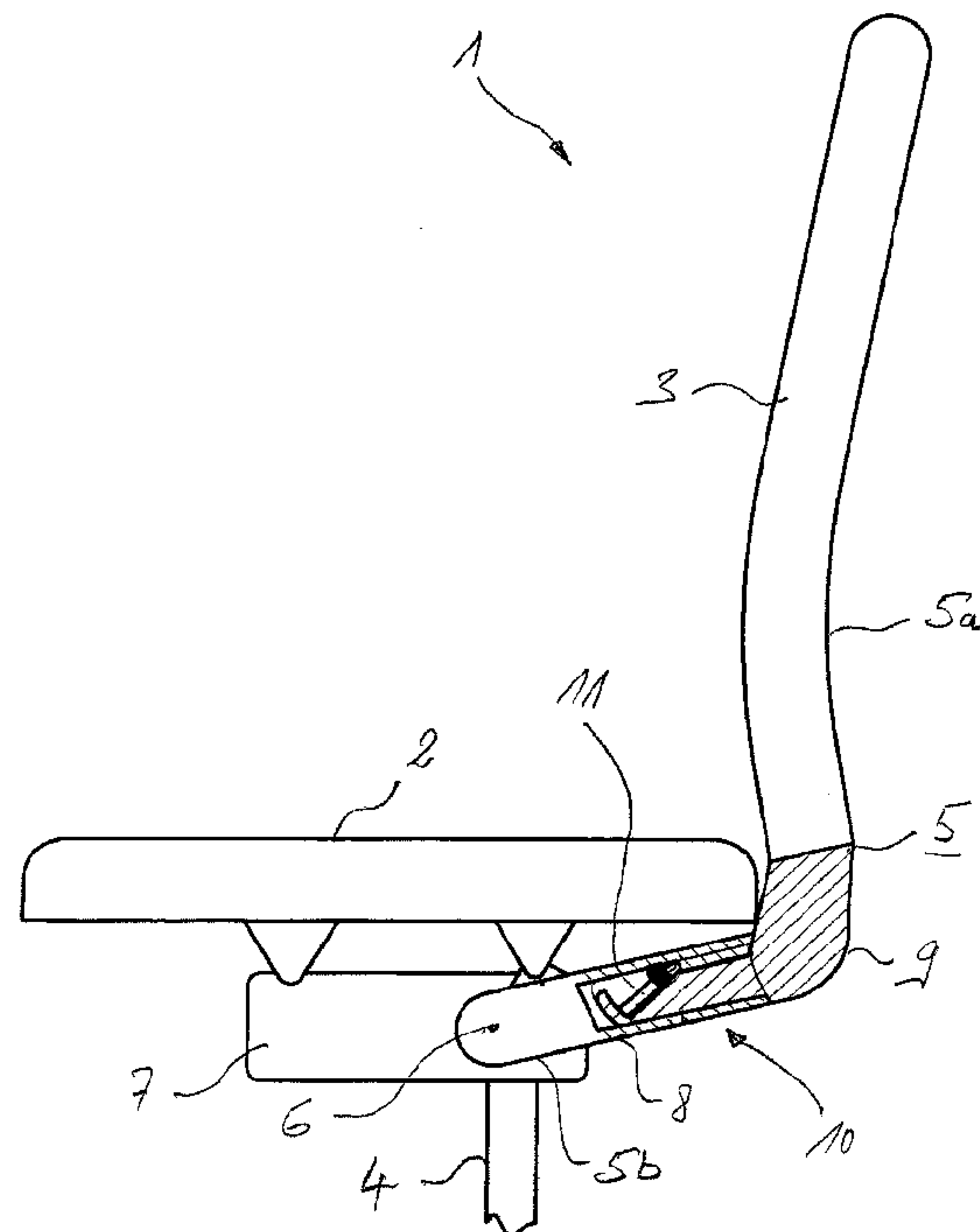




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(54) Titre : CHAISE, EN PARTICULIER CHAISE DE BUREAU
(54) Title: CHAIR, IN PARTICULAR OFFICE CHAIR



(57) **Abrégé/Abstract:**

The invention relates to a chair (1), in particular an office chair, comprising a backrest (3) that is coupled to a seat support (7) via a backrest support (5), and a seat pan (2). In order to be able to assemble the chair without using tools, the backrest support (5) is composed of two parts, i.e. a first support leg (8) associated with the seat support (7) and a second support leg (9) which is associated with the backrest (3), is joined to the first support leg (8), which is associated with the seat support, in a form-fitting plug-in connection (10), and is locked therein.

Abstract

The invention relates to a chair (1), in particular an office chair, having a backrest (3) which is coupled to a seat support (7) by means of a backrest support (5) and having a seat face (2), wherein for tool-free chair assembly the backrest support (5) is constructed in two pieces having a first support member (8) which is associated with the seat support (7) and having a second support member (9) which is associated with the backrest (3) and which is joined to the seat-support-side first support member (8) in a positive-locking plug type connection (10) and is locked therein.

Description

Chair, in particular office chair

- 5 The invention relates to a chair, in particular an office chair, having a backrest which is coupled to a seat support by means of a backrest support and having a seat face and optionally having two armrests.
- 10 A modern office chair, such as a chair known, for example, from DE 20 2005 017 321 U1 and DE 101 22 945 A1, generally comprises a seat support which rests on a chair column and to which a backrest support for a backrest is mechanically coupled so as to be pivotably
- 15 movable. A corresponding, in particular resiliently loaded, pivot mechanism enables the backrest to be inclined to the rear counter to an, for example, adjustable spring restoring force. Armrests which may be provided are therefore generally connected to the
- 20 backrest support in order to carry out an inclination movement together with the backrest.

Such an office chair can further generally be adjusted in terms of height by means of corresponding

25 construction of the chair column and can be readily displaced by means of rollers which are retained on extension arms which are arranged in the manner of a star. Such an office chair is often also provided with a synchronization mechanism which enables a synchronous

30 movement of the seat face with the backrest.

An object of the invention is to construct such an office chair so as to be able to be assembled in such a manner that it can be transported and/or stored in a

35 space-saving manner.

According to an aspect of the present invention there is provided a chair, in particular an office chair, having a backrest which is coupled to a seat support by means of a backrest support and having a seat face,

5 wherein the backrest support is constructed in two pieces having a seat-support-side (first) support member which is associated with the seat support and having a backrest-side (second) support member which is associated with the backrest and which is joined to the seat-support-
10 side support member in a positive-locking plug type connection and is locked therein;

 wherein one of the support members has at the joint side a plug type receiving member and the other support member has at the joint side an insertion shaft; and

15 wherein inside the plug type receiving member a locking bar is arranged so as to be rotatably movable.

In some embodiments, the locking bar can be pivoted in the insertion direction.

20

In some embodiments, inside the plug type receiving member there is arranged a resilient element which is supported, on the one hand, on the inner wall thereof and, on the other hand, on the locking bar and counter to the restoring force
25 of which the locking bar pivots during the plug type connection.

In some embodiments, the plug type connection has at the inner side a recessed stepped contour into which the locking bar
30 pivots during the plug type connection.

In some embodiments, the insertion shaft has a convex outer contour at the free end side.

In some embodiments, the insertion shaft has a locking contour in which the locking bar pivots out during the plug type connection.

5

In some embodiments, there is constructed along the locking contour a locking ramp along which the locking bar slides during the plug type connection with the free-end-side end face thereof into the locking end position.

10

In some embodiments, there is constructed along the locking contour an abutment ramp which runs obliquely into a ramp base and against which the locking bar pivots out during the locking operation.

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In some embodiments, the locking contour is constructed in such a manner that the locking bar during the pivot movement thereof into the locking end position draws the insertion shaft into the plug type receiving member in the insertion direction.

20

In some embodiments, the locking ramp is constructed in such a manner that it conforms to the pivot radius of the locking bar as the ramp depth increases.

25

According to another aspect of the present invention there is provided a chair, in particular an office chair, having a backrest which is coupled by means of a backrest support to a seat support and having a seat face and having at least one armrest which is coupled to a seat support by means of an armrest support,

30

wherein the armrest support is constructed in two pieces having a seat-support-side (first) support member which is

associated with the seat support and having an armrest-side
(second) support member which is associated with the armrest,

wherein the or each armrest is joined to the armrest
support in a positive-locking plug type connection and is
5 locked therein, and wherein one of the support members has at
the joint side a plug type receiving member and the other
support member has at the joint side an insertion shaft, and

wherein inside the plug type receiving member a locking
bar is arranged so as to be rotatably movable.

10

In some embodiments, the backrest is coupled to the seat
support in a pivotably movable manner.

In some embodiments, the seat face is coupled to the seat
15 support so as to be able to be moved synchronously with the
backrest.

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To this end, the chair according to the invention, in particular an office chair, is constructed so as to be able to be assembled without tools, in a particularly preferable manner by the backrest support being constructed in two pieces with there being formed second support members which during the assembly operation are inserted in a positive-locking plug type connection and are locked therein. Additionally or alternatively, armrests which may be present may also be inserted in a corresponding positive-locking plug type connection with the backrest support and locked in this plug type connection.

With regard to the joining or plug type connection of the two-piece backrest support, this is formed by a first support member which is associated with the seat support and a second support member which is associated with the backrest, wherein the backrest-side (second) support member is locked to the seat-support-side (first) support member in the positive-locking plug type connection during the joining operation. To this end, one of the support members has in a suitable manner at the joint side a shaft-like or bush-like plug type receiving member and the other support member has a corresponding insertion shaft at the joint side.

The locking of the two support members to each other is carried out in an advantageous embodiment by means of a locking bar, which is arranged in a rotationally movable manner inside the plug type receiving member and in this instance, preferably in the insertion direction of the insertion shaft of the corresponding support member, is arranged so as to be pivotably movable. Alternatively, there may be provided a locking hook which is then arranged so as to be pivotably movable in the plug type receiving member counter to the insertion direction of the insertion shaft.

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In order to increase the force with which the locking bar pivots into the locking position thereof during the plug type or joining connection operation, there is
5 advantageously provided a mechanical resilient element, in particular in the form of a helical, conical or coil spring which acts as a pressure spring. This resilient element is supported inside the plug type receiving member of the corresponding support member, on the one
10 hand, on the inner wall thereof and, on the other hand, on the locking bar.

During the insertion operation, in which the locking bar is pivoted by means of the free end of the
15 insertion shaft, the resilient element is tensioned. As soon as the insertion shaft of the corresponding support member has reached a specific desired position within the plug type receiving member of the other support member, the locking bar - where applicable
20 supported by the restoring force of the resilient element - pivots into an insertion-shaft-side locking contour. A stepped contour or a fold which is associated with the plug type receiving member at the inner side enables complete pivoting outwards of the
25 locking bar during the plug type connection so that the insertion shaft with the free end thereof and the shaft portion thereof which has the locking contour can pass the locking bar which is pivoted inwards against the inner wall of the plug type receiving member in an
30 unimpeded manner.

For the most low-friction possible pivoting of the locking bar against the inner wall of the plug type receiving member, the insertion shaft of the
35 corresponding support member has a convex outer contour at the free end side.

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According to an advantageous embodiment, there is constructed along the locking contour of the insertion shaft a locking ramp along which the locking bar slides during the plug type connection with the free-end-side end face thereof into the locking end position. A suitable development makes provision for there to be constructed along the locking contour an abutment ramp which runs obliquely into a ramp base and against which the locking bar pivots out during the locking operation. The locking ramp of the locking contour also runs into this ramp base.

The locking contour is in this instance constructed in such a manner that the locking bar during the pivot movement thereof into the locking end position draws the insertion shaft into the plug type receiving member in the insertion direction. This effect of self-drawing of the support member having the insertion shaft into the plug type receiving member of the other support member is achieved by means of a corresponding configuration of the locking ramp by it conforming to the pivot radius of the locking bar as the ramp depth increases. This effect with the correspondingly controlled pivoting of the locking bar into the locking end position thereof is supported by the resilient element, wherein relative movements which are carried out manually between the two support members result in movements of the support member which has the insertion shaft in the insertion direction until the locking bar has reached its locking end position.

When armrests are present, these are suitably joined to the backrest support by means of a corresponding plug type connection including locking during a manual assembly operation. In this instance, the backrest support may have a corresponding plug type receiving member whilst the respective armrest portion has a corresponding insertion shaft.

- 5 -

In an advantageous development, the backrest may be coupled to the seat support in a pivotably movable manner and the seat face may additionally be coupled to the seat support in a suitable manner so as to be able to be moved synchronously with the backrest.

The advantages achieved with the invention in particular involve the fact that, using such a positive-locking plug type connection of a two-piece backrest support, the backrest of a chair, preferably an office chair, can be mounted manually in a simple manner on a seat support without the use of tools, wherein the plug type connection between the two corresponding support members locks independently. A corresponding tool-free assembly of armrests which may be present using a corresponding plug type connection including locking enables a time-saving and particularly simple-to-handle assembly of a chair which is delivered in corresponding individual pieces without any need to provide conventional or special tools.

Although a corresponding plug type connection with a non-releasable locking already appears to be advantageous with respect to a space-saving transport and/or storage possibility of such an office chair which is provided in a few individual pieces, the locking of the plug type connection can suitably be released. To this end, an access opening to the locking bar is advantageously introduced into the plug type receiving member at the side of the plug type receiving member of the corresponding support member, which side is opposite the rotation axis of the locking bar. The access to the locking bar via the insertion shaft side facing the receiving-member-side plug type opening inside the plug type connection is suitably carried out by means of a corresponding, preferably significantly smaller unlocking opening inside the insertion shaft

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and at that location in the region of the locking contour, in particular in the region of the abutment ramp thereof, against which the locking bar is in abutment in the locking end position thereof.

5

Embodiments of the invention are explained in greater detail below with reference to the drawings, in which:

Figure 1 is a schematic side view of an office chair with joined support members of a backrest support,

10 Figure 2 is a cutout of the two-piece backrest support in a pre-insertion position,

Figure 3 is a view according to Figure 2 of the plug type connection of the support members of the backrest support in the insertion position without any locking,

15 Figure 4 is a view according to Figures 1 and 2 of the locked plug type connection of the two support members with the locking bar which is pivoted into the locking position,

Figure 5 is a perspective partial view of a structural embodiment of the backrest support in the pre-insertion position of the insertion shaft of the backrest-side support member in front of the plug type receiving member of the seat-support-side support member,

20 Figure 6 is a perspective cutout of the embodiment according to Figure 5 when viewed in the plug type receiving member of the seat-support-side support member,

Figure 7 is a perspective cutout of the embodiment according to Figure 5 with a backrest support which is connected and locked when viewed from below in the direction towards an unlocking opening in the seat-support-side support member,

30 Figure 8 is a schematic side view of an office chair according to Figure 1 with a variant of the plug type connection with joined support members of the backrest support, and

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Figure 9 is a front view of an office chair according to Figures 1 and 8 with armrests which are joined in corresponding plug type connections including locking.

- 5 Components which correspond to each other are given the same reference numerals in all the Figures.

Figure 1 is a schematic side view of an office chair 1. The office chair 1 has a seat or a seat face 2 and a
10 backrest 3 and is supported by means of a chair column 4 by a foot frame which is not shown. The office chair 1 may further have armrests which are not shown and which form a functional unit with the backrest 3.

- 15 A backrest support 5 which supports the backrest 3 and to which the armrests are where applicable secured so as to be able to be inserted and locked can be pivoted by means of a rotary bearing 6, that is to say, mounted on a seat support 7 so as to be able to be inclined
20 backwards. Between the backrest support 5 and the seat support 7 there may be provided in a manner not shown in greater detail a synchronization mechanism which enables a synchronous movement of the seat face 2 during an inclination of the backrest 3 in a backward
25 direction.

- The seat support 5 is substantially or approximately L-shaped with a vertical L-shaped member 5a and an L-shaped member 5b which extends in a substantially
30 horizontal manner below the seat face 2. In the shaded partially sectioned transition region of the two L-shaped members 5a, 5b, the backrest support 5 is constructed in two pieces with a seat-support-side (first) support member 8 and a backrest-side (second)
35 support member 9 being formed. The two support members 8, 9 are joined in a positive-locking plug type connection 10 and locked therein by means of a locking bar 11.

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As shown in Figures 2 to 4 as an enlarged cutout of the region of the plug type connection 10 between the two support members 8 and 9, the seat-support-side support member 8 has a plug type receiving member 12 in which the locking bar 11 is arranged with the articulation end thereof in a rotary bearing 13 so as to be pivotably movable. A resilient element 14 is also arranged inside the plug type receiving member 12 and is supported at that location on the one hand on an inner wall 15 of the plug type receiving member 12, which inner wall faces the seat face 2 and, on the other hand, on the locking bar 11. The locking bar 11 is located with the articulation end thereof in the region of a stepped contour 16 within the plug type receiving member 12 in such a manner that the locking bar 11 in the inwardly pivoted state shown in Figure 3 is in alignment with an insertion wall 17 between an insertion opening 18 and the rotary bearing 13. That is to say, the inwardly pivoted locking bar 11 completely releases the plug type receiving member 12, that is to say, a corresponding insertion channel inside the plug type receiving member 12 of the seat-support-side support member 8.

The backrest-side support member 9 of the backrest support 5 has at the joint side an insertion shaft 19 whose outer diameter is adapted to the clear width of the plug type receiving member 12 of the backrest-side support member 8 in order to produce a positive-locking connection in the plug type connection 10. Inside the insertion shaft 19, there are provided at the side thereof facing the locking bar 11 a locking contour 20 with an abutment ramp 21 which extends obliquely, that is to say, which declines in an oblique manner in the insertion direction 21, and a locking ramp 22 which merges with the abutment ramp 21 in the region of a ramp base 23. The locking ramp 22 rises in the

- 9 -

insertion direction 21 in a suitable manner in a circular manner or declines counter to the insertion direction 21 shown towards the ramp base 23.

5 During the production of the plug type connection 10 between the two support members 8, 9 of the two-piece backrest support 5, the insertion shaft 19 moves inside the plug type receiving member 12 into abutting contact with the locking bar 11. As a result, the locking bar
10 11 is pivoted into the pivoted-in position thereof shown in Figure 3. To this end, the insertion shaft 19 is provided at the free end side with a concave outer contour 24. As soon as the insertion shaft 19 has completely passed the locking bar 11 with the locking
15 contour 20 thereof and in this instance the ramp end 25 of the locking ramp 22, which end is applied to the ramp base 23, has passed the free end 26 of the locking bar 11, the locking bar 11 falls into the wedge-like locking contour 20 of the insertion shaft 19. During
20 this pivot movement of the locking bar 11, it slides with the free end 26 thereof along the locking ramp 22. In this instance, it conforms to the pivot radius of the locking bar 11 as the ramp depth increases in the direction of the ramp base 23.

25 In addition, the insertion shaft 19 is increasingly drawn in the insertion direction 21 into the corresponding plug type receiving member 12 of the corresponding support member 8. In this instance, the
30 locking contour 20 and in particular the path of the locking ramp 22 is constructed in such a manner that the locking bar 11 during its pivot movement into the locking end position draws the insertion shaft 19 into the plug type receiving member 12 in the insertion
35 direction 21. This effect of self-drawing of the support member 9 which has the insertion shaft 19 into the plug type receiving member 12 of the other support member 8 is achieved by means of a corresponding

- 10 -

circular configuration of the locking ramp 22 by it conforming to the pivot radius R_{11} of the locking bar 11 as the ramp depth increases. The circle which is associated with the pivot radius R_{11} of the locking bar 11 and the circle which is associated with the circle of the circular locking ramp 22 with the radius of curvature R_{22} are illustrated in Figure 4. It is possible to see the circle centre points of the circles with the radii R_{11} and R_{22} spaced apart from each other with the result described that the insertion shaft 19 while the free end 26 of the locking bar 11 slides along the locking ramp 22, the insertion shaft 19 of the support member 9 is increasingly drawn into the corresponding plug type receiving member 12 of the support member 8. This effect with a correspondingly controlled pivoting of the locking bar 11 is supported by the resilient element 14. In this instance, relative movements between the two support members 8, 9 result in movements of the support member 9 which has the insertion shaft 19 in the insertion direction 21 until the locking bar 11 has reached its locking end position.

Figures 5 to 7 show a specific structural configuration of the two-piece backrest support 5 with the seat-support-side support member 8 and the backrest-side support member 9 thereof in a preliminary position of the plug type connection 10 between the insertion shaft 19 and the plug type receiving member 12 of the respective support member 9 or 8, respectively. It is possible to see the locking contour 20 in the embodiment, for example, formed by two struts 20a, 20b which are spaced apart from each other and on which the abutment ramp 21 and the locking ramp 22 are formed.

35

Figure 6 is a view into the plug type receiving member 12 of the seat-support-side support member 8. It is possible to see the in this instance plate-like locking

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bar 11 shown in the pivoted-out position thereof according to Figure 2. The stepped contour 16, behind which the locking bar 11 during the production of the plug type connection 10 pivots in against the inner wall 15 of the plug type receiving member 12, is provided in this instance by a rod-like or strut-like formed element 27 which is formed on the corresponding inner wall 15 of the plug type receiving member 12 of the seat-support-side support member 8. In the inner wall 28 of the plug type receiving member 12, which wall is opposite this inner wall 15 and the insertion wall 17, there is introduced an access opening 29 for a tool by means of which the plug type connection 10 between the two support members 8 and 9 of the backrest support 5 can be unlocked.

In the locked plug type connection 10 shown in Figure 7 between the two support members 8 and 9 of the backrest support 5, the insertion shaft 19 is accessible in the region of the web-like construction of the locking contour 20 thereof via the access opening 28. In this instance, there is formed between the webs 20a, 20b which together form the locking contour 19 at the opposite side a gap-like or slot-like unlocking opening 30, by means of which the locking bar 11 is accessible by means of a tool and can be manually pivoted into the unlocking position thereof shown in Figure 3. If the plug type connection 10 is unlocked in this manner, the backrest 3 together with the backrest-side support member 9 can be released from the seat-support-side support member 8.

The invention is not limited to the embodiments described above. Instead, other variants of the invention may also be derived therefrom by the person skilled in the art without departing from the subject-matter of the invention. In particular, all the individual features described in connection with the

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embodiments can further also be combined in a different manner, without departing from the subject-matter of the invention.

5 For example, according to the variant shown in Figure 8, the plug type receiving member 12 may also be provided on the backrest-side support member 9 and accordingly the insertion shaft 19 may be provided on the seat-support-side support member 8.

10

In addition, the locking bar 11 may also be constructed as a locking hook which in the opposite insertion direction 21 with respect to Figure 2 is shown so as to extend obliquely in the initial position thereof in order during the production of the plug type connection 15 10 to again be deflected against the inner wall 15 or against the insertion wall 17 of the plug type receiving member 12 and with corresponding insertion positioning to slide with the hook end thereof along 20 the locking ramp 22 against the ramp base 23. The effect of the self-drawing of the insertion shaft 19 into the corresponding plug type receiving member 12 is thereby achieved again.

25 Furthermore, with an office chair 1 which is provided according to Figure 9 with armrests 31, these can also be mounted without any tools on the backrest support 5 with an identical plug type connection 10' including locking by means of a corresponding locking bar 11' 30 which is preferably supported by means of a resilient element 14'.

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List of reference numerals

	1	Chair/office chair
	2	Seat face
5	3	Backrest
	4	Chair column
	5	Backrest support
	5a	Vertical L-shaped member
	5b	Horizontal L-shaped member
10	6	Rotary bearing
	7	Seat support
	8	Seat-support-side support member
	9	Backrest-side support member
	10	Plug type connection
15	11	Locking bar
	12	Plug type receiving member
	13	Rotary bearing
	14	Resilient element
	15	Inner wall
20	16	Stepped contour
	17	Insertion wall
	18	Insertion opening
	19	Insertion shaft
	20	Locking contour
25	20a,b	Strut
	21	Abutment ramp
	22	Locking ramp
	23	Ramp base
	24	Outer contour
30	25	Ramp end
	26	Free end
	27	Formed element
	28	Inner wall
	29	Access opening
35	30	Unlocking opening
	31	Armrest

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Chair, in particular an office chair, having a backrest which is coupled to a seat support by means of a backrest support and having a seat face,

wherein the backrest support is constructed in two pieces having a seat-support-side support member which is associated with the seat support and having a backrest-side support member which is associated with the backrest and which is joined to the seat-support-side support member in a positive-locking plug type connection and is locked therein;

wherein one of the support members has at the joint side a plug type receiving member and the other support member has at the joint side an insertion shaft; and

wherein inside the plug type receiving member a locking bar is arranged so as to be rotatably movable.

2. Chair according to claim 1, wherein the locking bar can be pivoted in the insertion direction.

3. Chair according to claim 1, wherein inside the plug type receiving member there is arranged a resilient element which is supported, on the one hand, on the inner wall thereof and, on the other hand, on the locking bar and counter to the restoring force of which the locking bar pivots during the plug type connection.

4. Chair according to claim 1 or claim 3, wherein the plug type connection has at the inner side a recessed

stepped contour into which the locking bar pivots during the plug type connection.

5. Chair according to any one of claims 1 to 4, wherein the insertion shaft has a convex outer contour at the free end side.

6. Chair according to any one of claims 1 to 5, wherein the insertion shaft has a locking contour in which the locking bar pivots out during the plug type connection.

7. Chair according to claim 5 or claim 6, wherein there is constructed along the locking contour a locking ramp along which the locking bar slides during the plug type connection with the free-end-side end face thereof into the locking end position.

8. Chair according to claim 6 or claim 7, wherein there is constructed along the locking contour an abutment ramp which runs obliquely into a ramp base and against which the locking bar pivots out during the locking operation.

9. Chair according to any one of claims 6 to 8, wherein the locking contour is constructed in such a manner that the locking bar during the pivot movement thereof into the locking end position draws the insertion shaft into the plug type receiving member in the insertion direction.

10. Chair according to any one of claims 6 to 9, wherein the locking ramp is constructed in such a manner that it

conforms to the pivot radius of the locking bar as the ramp depth increases.

11. Chair, in particular an office chair, having a backrest which is coupled by means of a backrest support to a seat support and having a seat face and having at least one armrest which is coupled to a seat support by means of an armrest support,

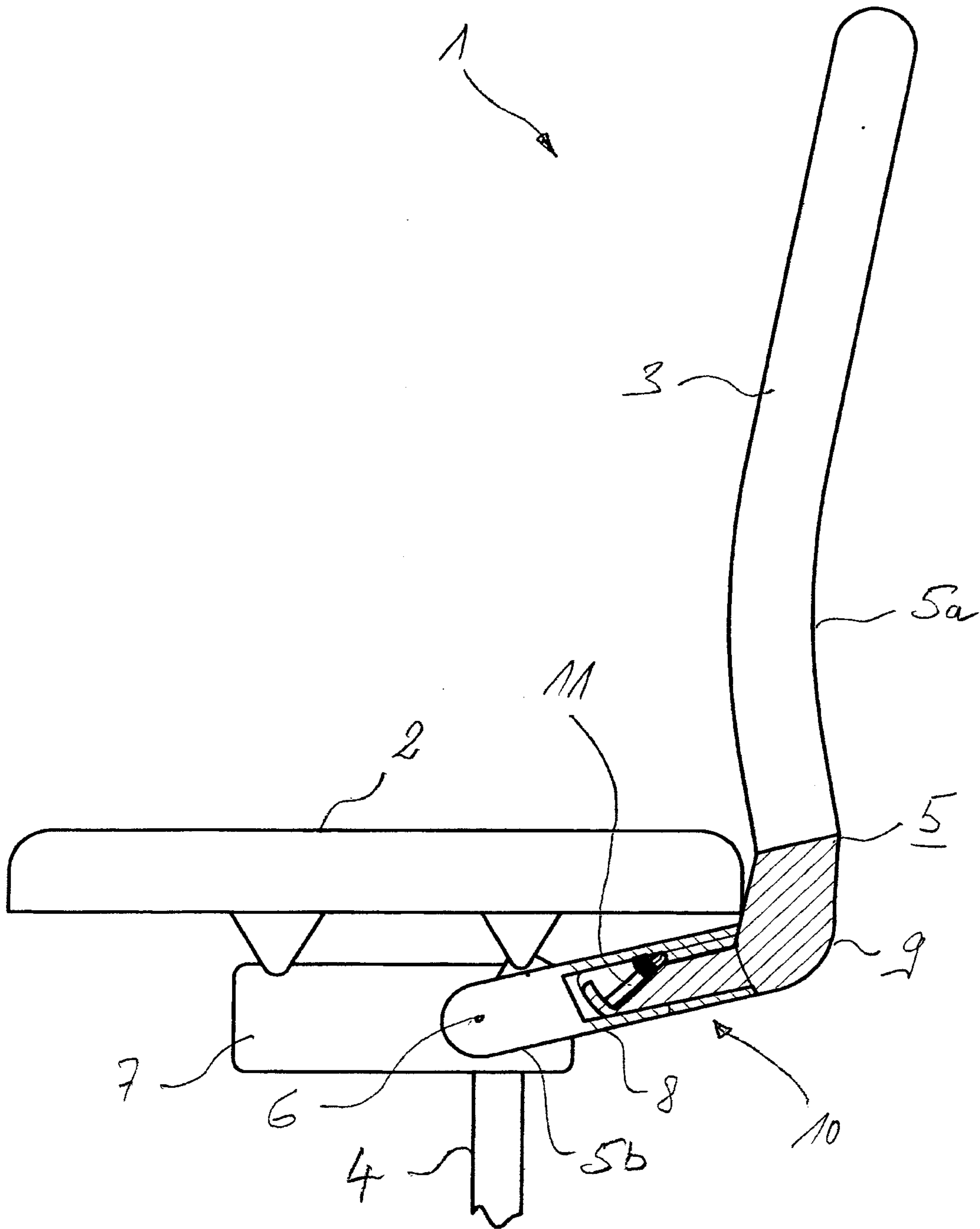
wherein the armrest support is constructed in two pieces having a seat-support-side support member which is associated with the seat support and having an armrest-side support member which is associated with the armrest,

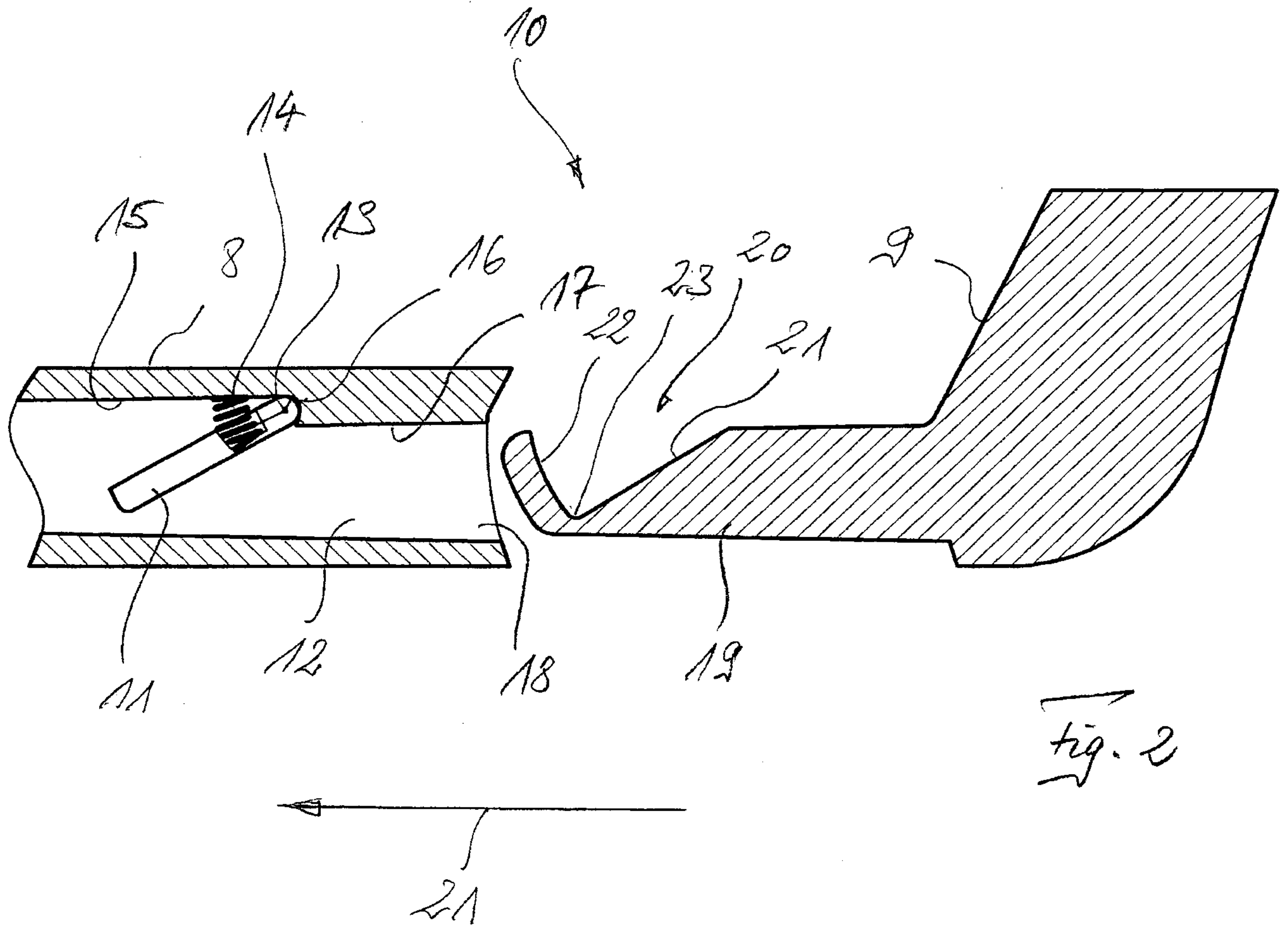
wherein the or each armrest is joined to the armrest support in a positive-locking plug type connection and is locked therein, and wherein one of the support members has at the joint side a plug type receiving member and the other support member has at the joint side an insertion shaft, and

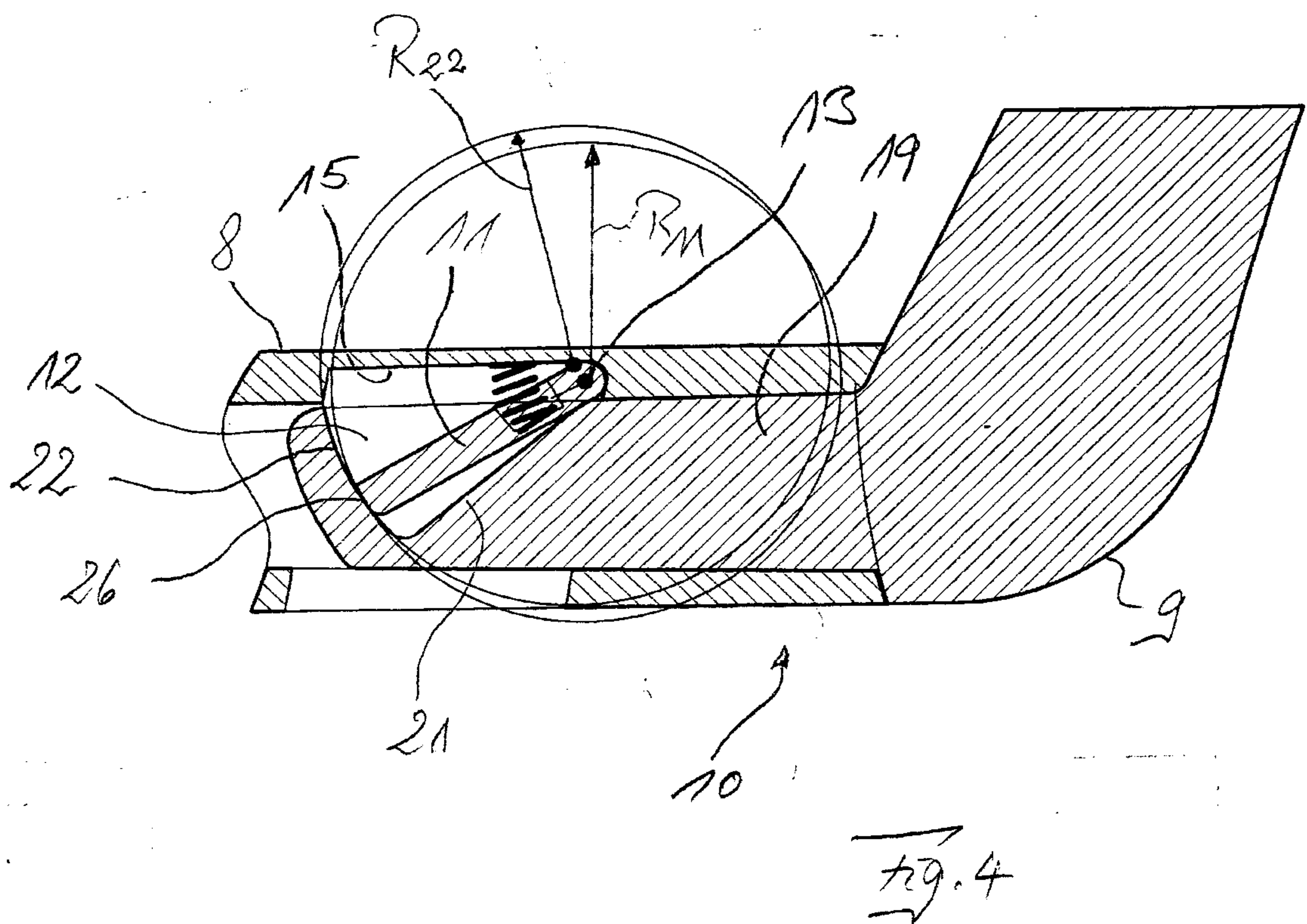
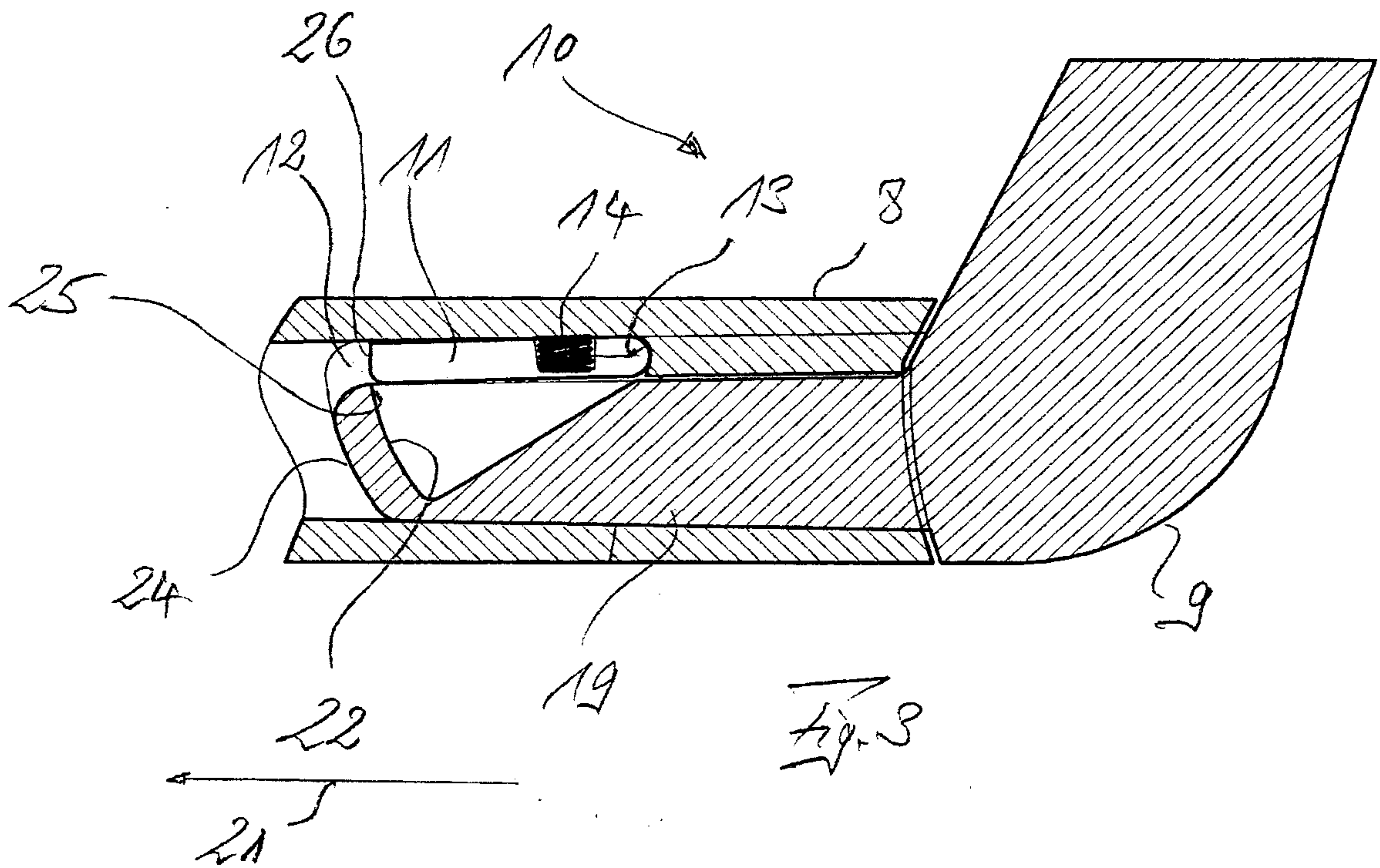
wherein inside the plug type receiving member a locking bar is arranged so as to be rotatably movable.

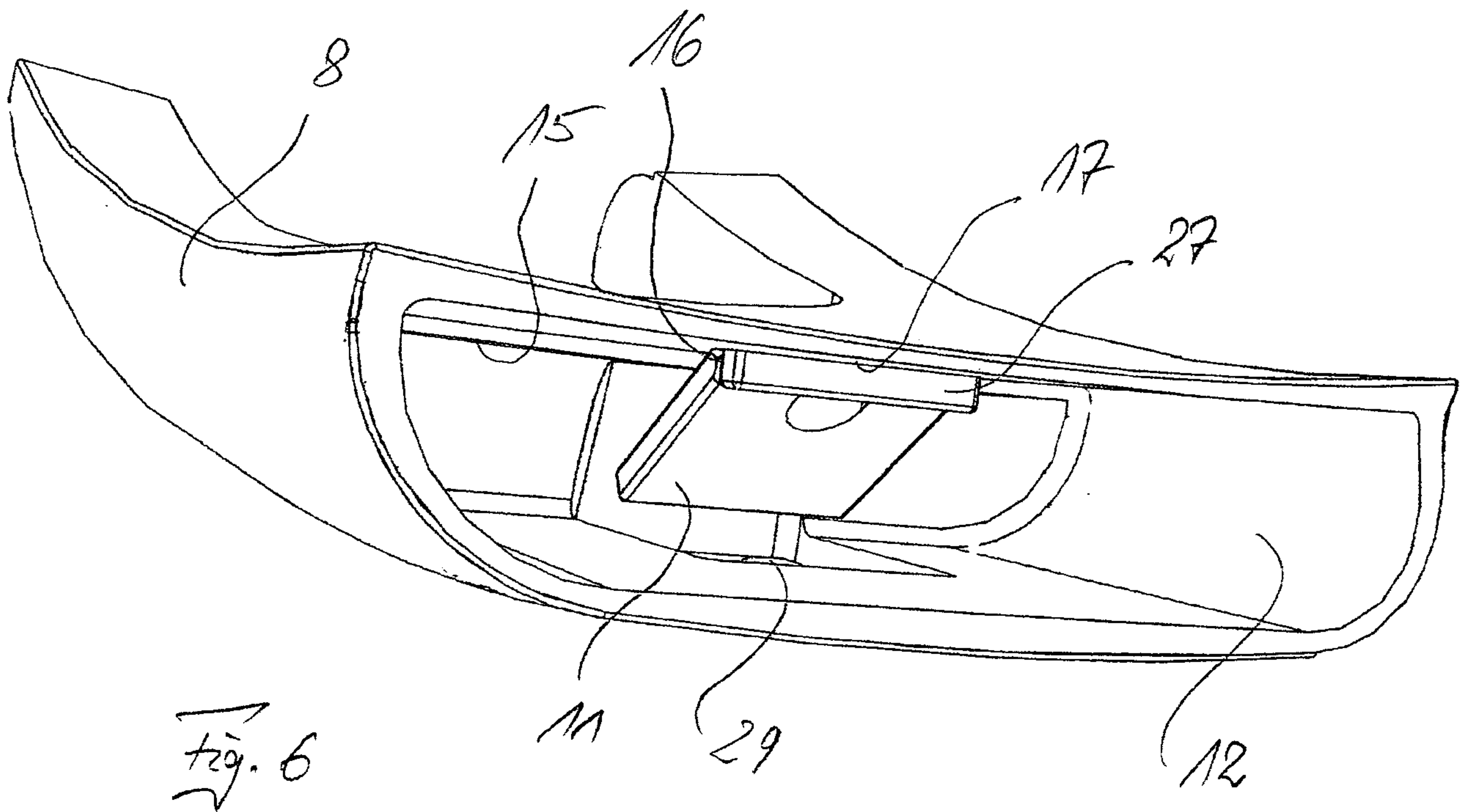
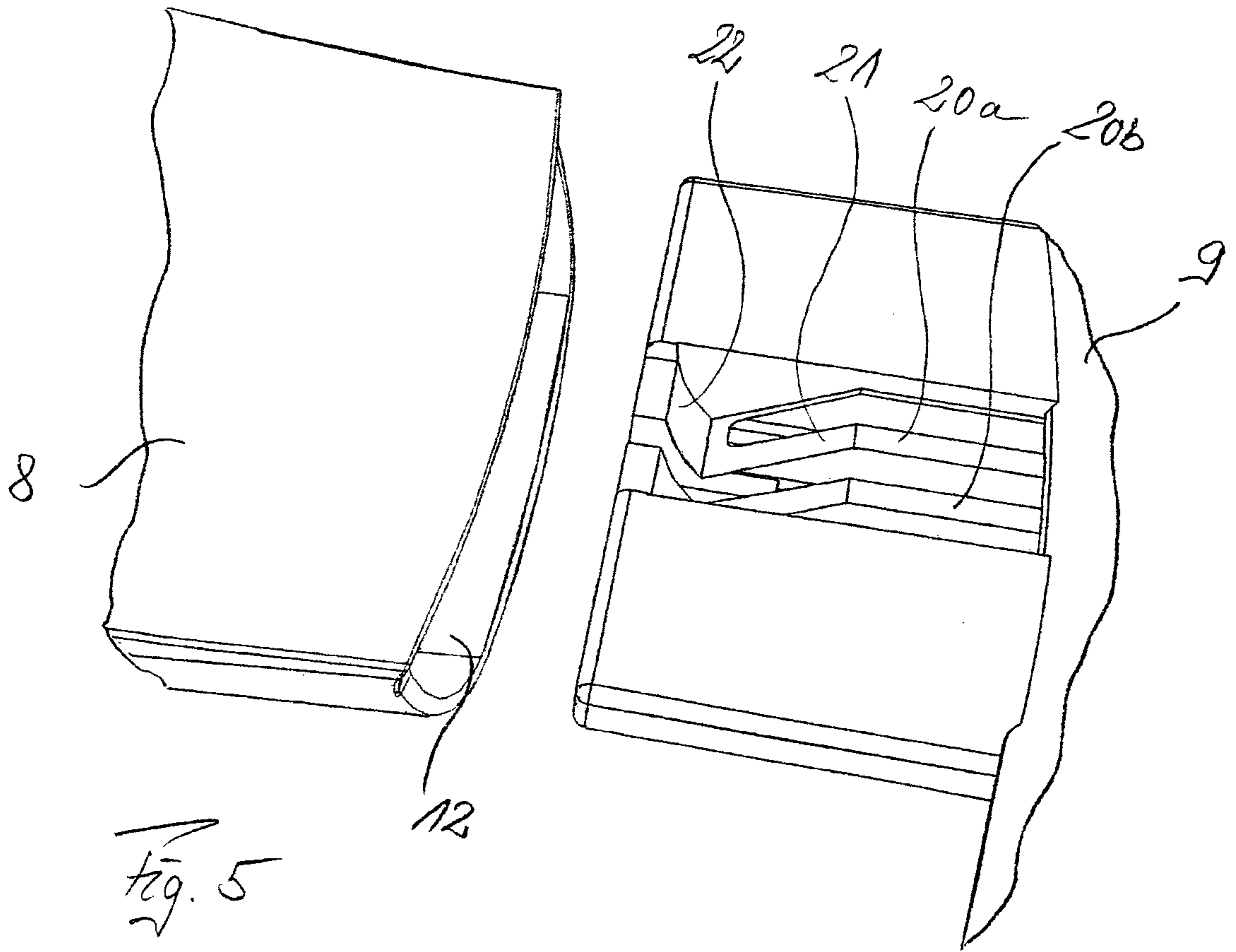
12. Chair according to any one of claims 1 to 10, wherein the backrest is coupled to the seat support in a pivotably movable manner.

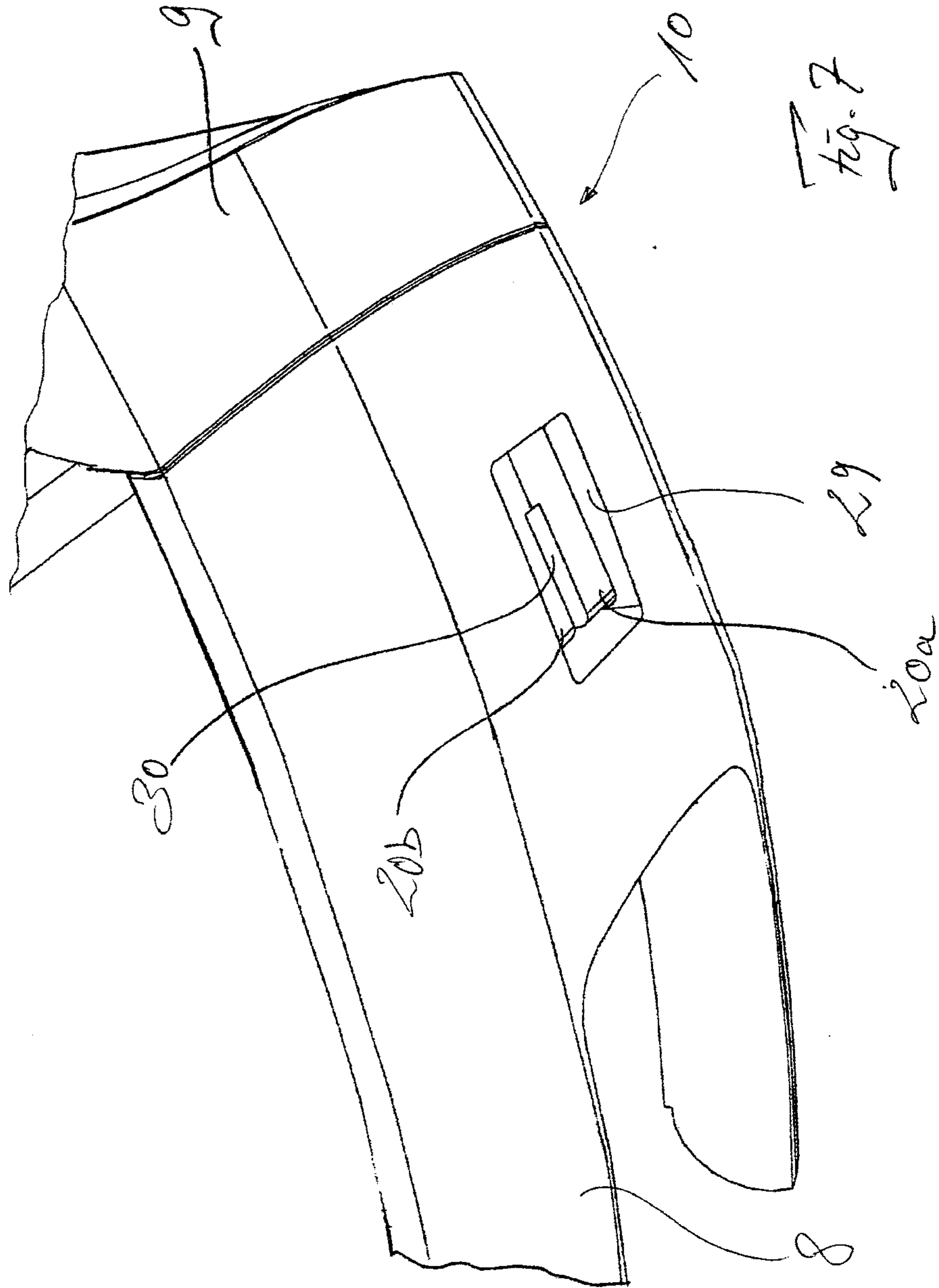
13. Chair according to any one of claims 1 to 12, wherein the seat face is coupled to the seat support so as to be able to be moved synchronously with the backrest.











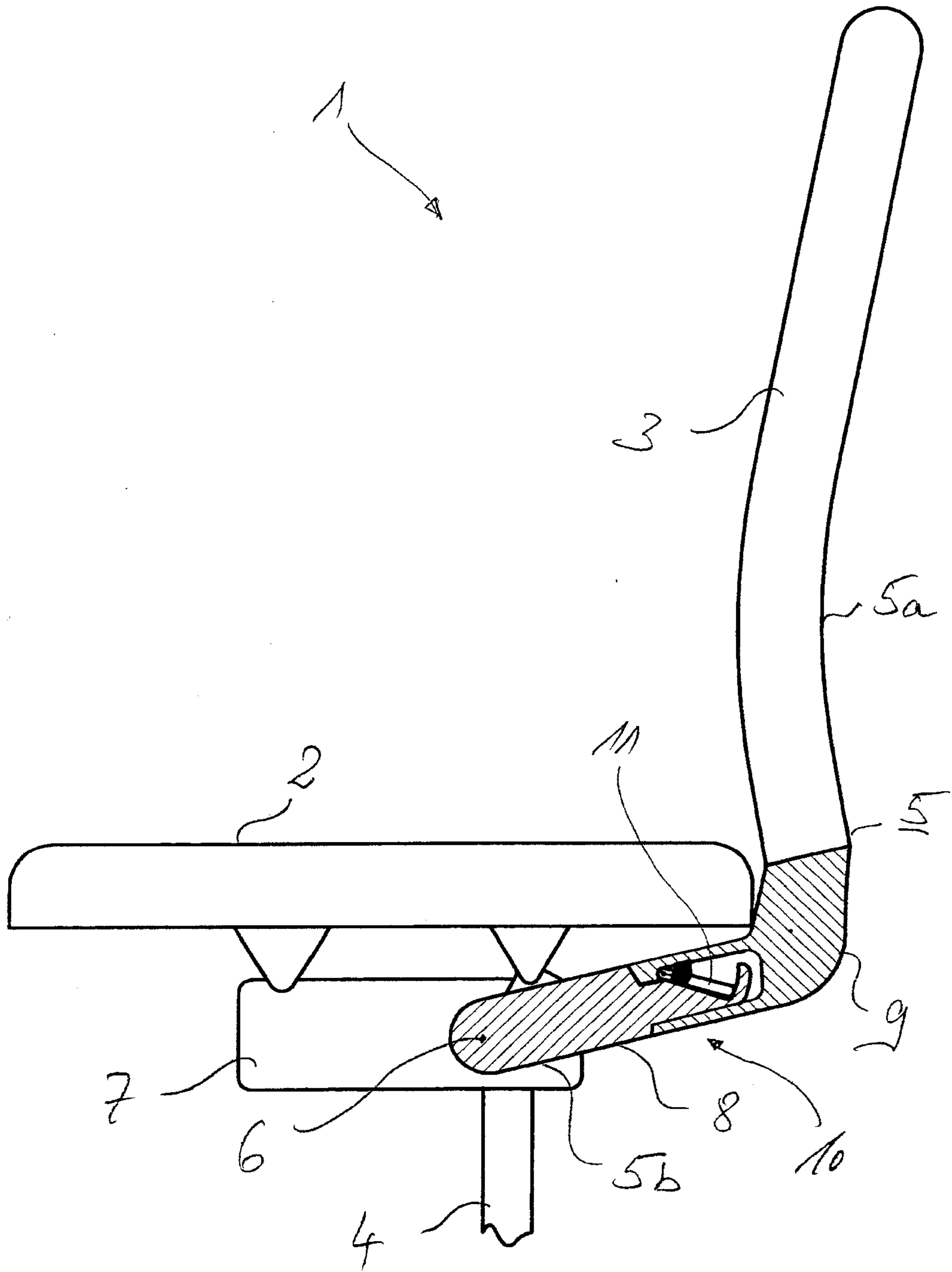


Fig. 8

