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(72) Inventor: **Houli, Alain**
20124 Milano (IT)

(74) Representative:
Modiano, Guido, Dr.-Ing. et al
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

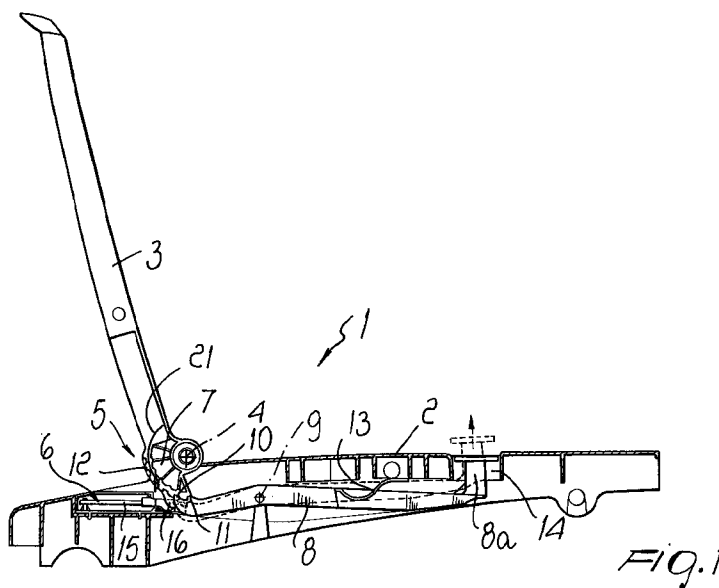
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(71) Applicant: **Shaf S.p.A.**
20017 Rho (Milano) (IT)

(54) Bed or chair with variable-position backrest

(57) A bed or chair with variable-position backrest, comprising a seat portion (2) and a backrest (3) which is hinged to the seat portion (2), about a substantially horizontal axis (4), proximate to the rear side of the seat portion. The bed or chair comprises a detent device (5) which is interposed between the seat portion (2) and the backrest (3) and is suitable to lock the backrest, in its rotation about its horizontal axis (4), in positions which

lie at various angles with respect to the plane of arrangement of the seat portion (2). An elastic means (6) is provided which is interposed between the seat portion (2) and the backrest (3) and elastically contrast the rotation of the backrest (3) about its horizontal axis (4) in the direction of rotation that causes an increase in the angle formed by the backrest (3) with respect to the plane of arrangement of the seat portion (2).



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Description

[0001] The present invention relates to a bed or chair, particularly for outdoor use, with variable-position backrest.

[0002] Conventional sunbathing beds or garden chairs are substantially constituted by a seat portion and by a backrest which is hinged to the seat portion, proximate to its rear side, about an axis which is substantially horizontal and whose angle with respect to the plane of arrangement of the seat portion can be changed according to the requirements of the user by using the hinged coupling provided between the backrest and the seat portion.

[0003] In some beds, the inclination of the backrest with respect to the seat portion is changed by means of a detent mechanism which is substantially constituted by a toothed sector centered on the hinge axis of the backrest, which is rigidly coupled to the backrest and can be engaged by a lever which can be operated by the user and is associated with the seat portion. In some of these beds, the lever is simply meant to lock the rotation of the backrest about its hinge axis by engaging the teeth of the toothed sector, while in other beds the lever has an active function in producing the gradual rotation of the backrest about its own hinge axis, disengaging each time from the teeth of the toothed sector and engaging subsequent teeth.

[0004] In the first case, if the user wishes to reduce the angle of the backrest with respect to the seat portion, i.e., if he wishes to raise the backrest, he must rotate the backrest manually.

[0005] In the second solution it is in any case necessary for the user to stop resting on the backrest in order to allow the lever to gradually rotate the backrest about its hinge axis.

[0006] The aim of the present invention is to solve the above problem by providing a bed or chair in which it is possible to vary the inclination of the backrest with respect to the seat portion without thereby requiring the user to get up from the bed or chair or in any case free the backrest completely.

[0007] Within the scope of this aim, an object of the present invention is to provide a bed or chair which is structurally simple and can be manufactured at competitive costs.

[0008] Another object of the present invention is to provide a bed or chair which is particularly simple and easy to use.

[0009] This aim, these objects and others which will become apparent hereinafter are achieved by a bed or chair with variable-position backrest, which comprises a seat portion and a backrest hinged to said seat portion, about a substantially horizontal axis, proximate to a rear side of said seat portion, characterized in that it comprises a detent device interposed between said seat portion and said backrest and adapted to lock the backrest in positions which lie at various angles with respect

to a plane of arrangement of the seat portion, elastic means being interposed between said seat portion and said backrest which elastically contrast the rotation of said backrest about said hinge axis in a direction of rotation that causes an increase in an angle formed by said backrest with respect to the plane of arrangement of the seat portion.

[0010] Further characteristics and advantages of the present invention will become apparent from the following detailed description of a preferred but not exclusive embodiment of the bed or chair according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a partially sectional schematic lateral elevation view of a bed or chair according to the invention;

Figure 2 is an enlarged-scale sectional view of a detail of Figure 1 related to the detent device, with the backrest fully reclined over the seat portion;

Figure 3 is a view of the same detail shown in Figure 2, with the backrest in an intermediate position; Figure 4 is a view of the same detail as in Figures 2 and 3, with the backrest in a lower position with respect to the position shown in Figure 3;

Figure 5 is a view of the same detail as in Figures 2 to 4, with the backrest completely overturned with respect to Figure 2;

Figure 6 is a top plan view of a detail of the bed or chair according to the present invention.

[0011] With reference to the above figures, the bed or chair according to the invention, generally designated by the reference numeral 1 comprises a seat portion 2 and a backrest 3 which is hinged to the seat portion 2 proximate to a rear side of the seat portion 2 about an axis 4 which is substantially horizontal.

[0012] The bed or chair further comprises a detent device, generally designated by the reference numeral 5, which is interposed between the seat portion 2 and the backrest 3 and is suitable to lock the backrest 3 in positions which lie at various angles with respect to a plane of arrangement of the portion 2 in the rotation of the backrest 3 about its hinge axis 4.

[0013] According to the invention, elastic means 6 are interposed between the seat portion 2 and the backrest 3 and elastically contrast the rotation of the backrest 3 about the hinge axis 4 in a direction of rotation that increases the angle formed by the backrest 3 with respect to the plane of arrangement of the seat portion 2.

[0014] More particularly, the detent device conveniently comprises a toothed sector 7, which is rigidly coupled to the backrest 3 and is arranged so that its center lies on the hinge axis 4, and a locking lever 8, which is associated with the seat portion 2 and can move on command from a locking position, in which it engages at least one tooth 12 of the toothed sector 7, to

a release position, in which it is disengaged from the teeth 12 of the toothed sector 7.

[0015] The locking lever 8 is pivoted, by means of an intermediate portion, to the seat portion 2 about an axis 9 and has an actuation end 8a, which is optionally mushroom-shaped in order to allow easy grip by the user, and an opposite end, which is provided with two teeth, respectively a tooth 10 and a complementary tooth 11, which are meant to engage the teeth 12 of the toothed sector 7.

[0016] An elastic return means, constituted by a spring 13, is interposed between the locking lever 8 and the seat portion 2 and elastically contrasts the rotation of the lever 8 about the axis 9 in the direction of rotation that disengages the locking lever 8 with respect to the toothed sector 7.

[0017] The locking lever 8 is arranged along one side of the seat portion 2 and the end 8a is arranged at a recess 14 which is appropriately provided on the side of the seat portion 2.

[0018] The elastic means 6, which contrast the rotation of the backrest 3 in the direction of rotation which increases its angle with respect to the seat portion 2, comprise an extendable element 15, for example an elastic cord, which is fixed by means of one of its ends to the seat portion 2 and is directed substantially tangent or parallel to a tangent direction with respect to the toothed sector 7. In the extendable element 15, the opposite end with respect to the one that is rigidly coupled to the seat portion 2 is shaped so that it can be engaged by a hook 16 which is rigidly coupled to the toothed sector 7 and protrudes radially therefrom.

[0019] Advantageously, the extendable element 15 is accommodated inside a box-like body 17 fixed to the seat portion 2 for example by means of a coupling of the snap-action type. The extendable element 15 is fixed, by means of one of its ends, to a rear wall of the box-like body 17, while its opposite end is associated with a block 18, which is provided with a retention lug 19 that engages an edge of the box-like body 17 from which it protrudes. The block 18 is provided with a pin 20 which is meant to be engaged by the hook 16, which is rigidly coupled to the toothed sector 7.

[0020] The back of the teeth 12 has a portion which is shaped like an inclined plane, and the portion of the teeth 10 and 11 that is directed toward the back of the teeth 12 is shaped correspondingly, so as to allow the upward rotation of the backrest 3 also if the locking lever 8 is only partially disengaged from the teeth 12. In this partial disengagement condition, automatic locking of the backrest 3 during the opposite rotation, i.e., for lowering, is in any case ensured by the shape of the teeth 10 and 11 which mesh between the teeth 12.

[0021] Advantageously, the bed or chair according to the invention further comprises a friction means which is interposed between the seat portion 2 and the backrest 3 and is suitable to slow the rotation of the backrest 3 about its hinge axis caused by the elastic means 6.

[0022] The friction means comprises a raised ridge 21 which protrudes on the side of the toothed sector 7 around the axis 4 and can slide, with slight interference, against a corresponding ridge 22 provided in a region of the seat portion 2 which laterally faces the toothed sector 7.

[0023] Conveniently, there is also provided a means for stopping the rotation of the backrest 3 about its hinge axis 4 caused by the elastic means 6 independently of the action of the detent device 5.

[0024] The stop means comprises a lug 24 which is rigidly coupled to the backrest 3 and is arranged proximate to the ridge 21. The lug 24 abuts against the ridge 22 when the backrest 3 is in the fully raised position.

[0025] It should be noted that the lug 24 can in any case move beyond the ridge 22 by utilising the elasticity of the ridge 22 and/or of the portion that bears the lug 24, in order to allow to fold the backrest 3 over the seat portion 2, as shown in Figure 2.

[0026] Conveniently, the seat portion 2 and the backrest 3 can be made of molded synthetic material. In this case, the toothed sector 7 can be advantageously formed monolithically by molding together with the remaining part of the backrest 3.

[0027] In the various figures of the accompanying drawings, the bed or chair has been shown only partially for the sake of simplicity. In particular, only the seat portion 2 and the backrest 3 have been shown. In the practical embodiment, the seat portion 2 can be completed by feet and/or by wheels to make it easier to move.

[0028] Operation of the bed or chair according to the invention is as follows.

[0029] When the bed is not in use, the backrest 3 can be folded over the seat portion 2, as shown in Figure 2, in order to minimize the total space occupied by the bed or chair. In this position, the hook 16 is disengaged from the pin 20 and therefore from the extendable element 15.

[0030] When the bed is in use, the backrest 3 is rotated manually about the hinge axis 4, i.e., it is raised, until the hook 16 engages the pin 20, which is kept in the position in which it can be engaged by the hook 16 by the lug 19 which, as mentioned, rests against an edge of the box-like body 17, and until the first tooth 12 of the toothed sector 7 is engaged between the teeth 10 and 11 of the locking lever 8. In this position, the user can sit on the seat portion 2 and can rest his back against the backrest 3.

[0031] If the user wishes to vary the position of the backrest 3 with respect to the seat portion 2, he can act on the locking lever 8, pulling the actuation end 8a upward and thus disengaging the teeth 10 and 11 from the toothed sector 7. In these conditions, the backrest 3 can rotate about the hinge axis 4 and the user, by means of his own weight, can cause the backrest 3 to lower until it is in the intended position. Once the intended position has been reached, the user releases the actuation end 8a of the lever 8 which, through the

action of the spring 13, engages, by means of its teeth 10 and 11, the teeth 12 of the toothed sector 7.

[0032] It should be noted that the downward movement of the backrest 3 produces the elastic loading of the extendable element 15.

[0033] The backrest 3 can be lowered by acting on the locking lever 8 and by pushing with one's back against the backrest 3 so that the backrest reaches a position which is substantially co-planar with respect to the seat portion 2, as shown in particular in Figure 5.

[0034] If the user wishes to raise the backrest 3 it is sufficient for him to act on the actuation end 8a of the lever so as to cause even only partial disengagement of the locking lever 8 from the toothed sector 7, as described above, and to lift his back to the position intended for the backrest 3. The backrest 3, through the action of the extendable element 15, follows the movement of the user's back by rotating about the axis 4. When the backrest 3 has reached the intended position, the user can lock the backrest 3 in this position by releasing the locking lever 8.

[0035] In this manner, the user can vary the position of the backrest 3 with respect to the seat portion 2 according to requirements without ever getting up from the bed or chair both when he wishes to lower the backrest 3 and when he wishes to raise it.

[0036] The rotation of the backrest 3 in the upward direction produced by the elastic reaction of the extendable element 15 is braked by the sliding of the ridge 21 against the ridge 22, accordingly preventing the upward movement from being too sudden and therefore unpleasant for the user.

[0037] In practice it has been observed that the bed or chair according to the invention fully achieves the intended aim and objects, since it allows to vary the position of the backrest both during lifting and during lowering without requiring the user to get off the bed or chair.

[0038] The bed or chair thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept; moreover, all the details may be replaced with other technically equivalent elements.

[0039] In practice, the materials employed, as well as the dimensions, may be any according to the requirements and to the state of the art.

[0040] The disclosures in Italian Patent Application No. MI97A002605 from which this application claims priority are incorporated herein by reference.

[0041] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

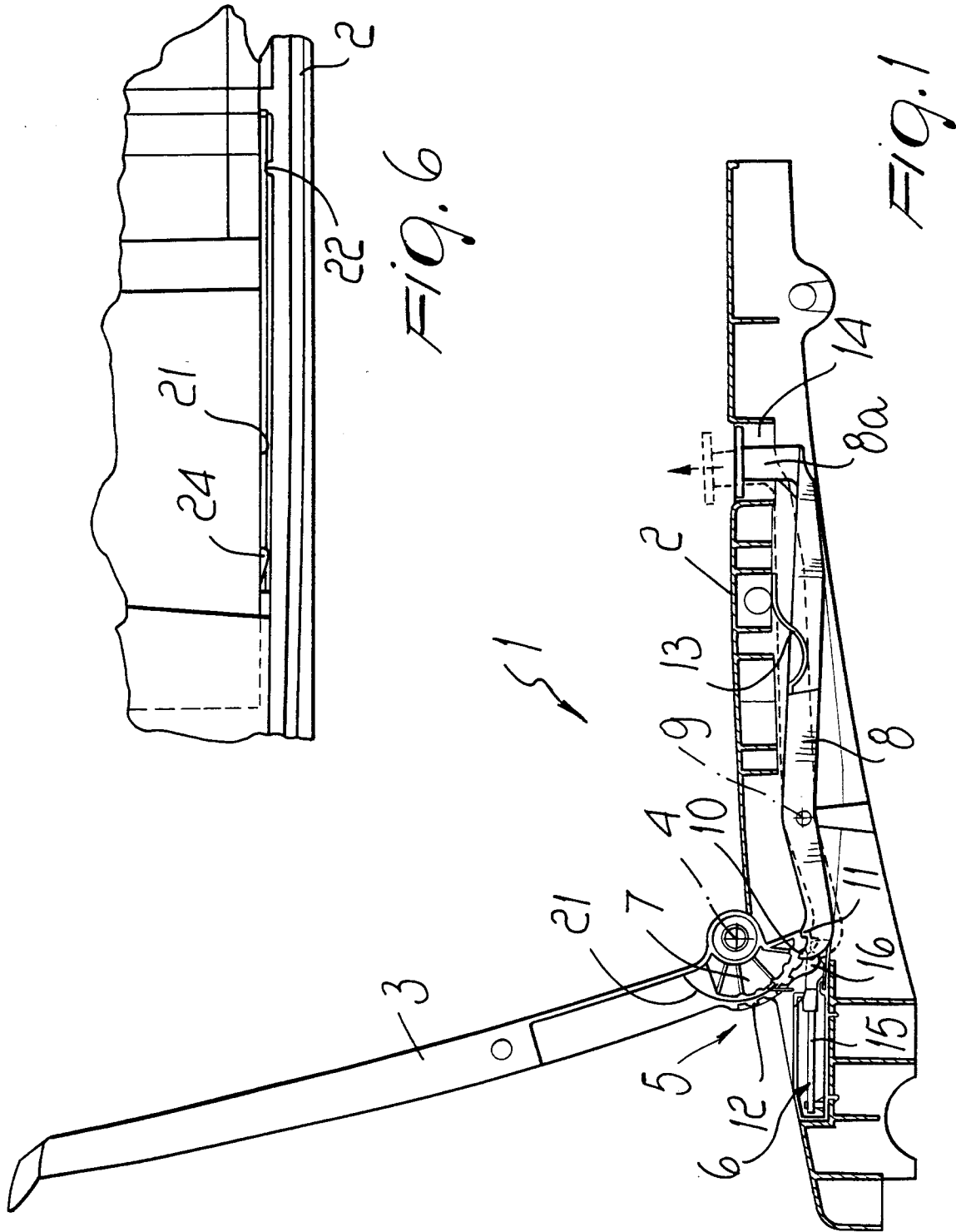
1. A bed or chair with variable-position backrest, comprising a seat portion and a backrest hinged to said seat portion, about a substantially horizontal axis, proximate to a rear side of said seat portion, characterized in that it comprises a detent device interposed between said seat portion and said backrest and adapted to lock the backrest in positions which lie at various angles with respect to a plane of arrangement of the seat portion, an elastic means being interposed between said seat portion and said backrest which elastically contrasts the rotation of said backrest about said hinge axis in a direction of rotation that causes an increase in an angle formed by said backrest with respect to the plane of arrangement of the seat portion.
2. The bed or chair according to claim 1, characterized in that said detent device comprises at least one toothed sector which is rigidly coupled to said backrest and is arranged so that its center lies on a hinge axis of said backrest with respect to said seat portion and a locking lever which is associated with said seat portion and moves on command from a locking position, in which it engages at least one tooth of said toothed sector, to a release position, in which it is disengaged from the teeth of said toothed sector.
3. The bed or chair according to claim 2, characterized in that said locking lever moves on command from the locking position to the release position in contrast with an elastic return means.
4. The bed or chair according to claim 2, characterized in that said locking lever is pivoted, by means of an intermediate portion, to said seat portion and is arranged along one side of said seat portion, said lever having an end which is arranged in a lateral region of the seat portion and another end which engages the teeth of said toothed sector.
5. The bed or chair according to claim 2, characterized in that said locking lever has a pair of teeth, respectively a tooth and a complementary tooth, which engage the teeth of said toothed sector.
6. The bed or chair according to claim 3, characterized in that said elastic return means of the locking lever comprises a spring interposed between said locking lever and the seat portion.
7. The bed or chair according to claim 2, characterized in that said elastic means that contrasts the rotation of said backrest comprises an elastically extendable element which is fixed by means of one of its ends to said seat portion and is orientated so

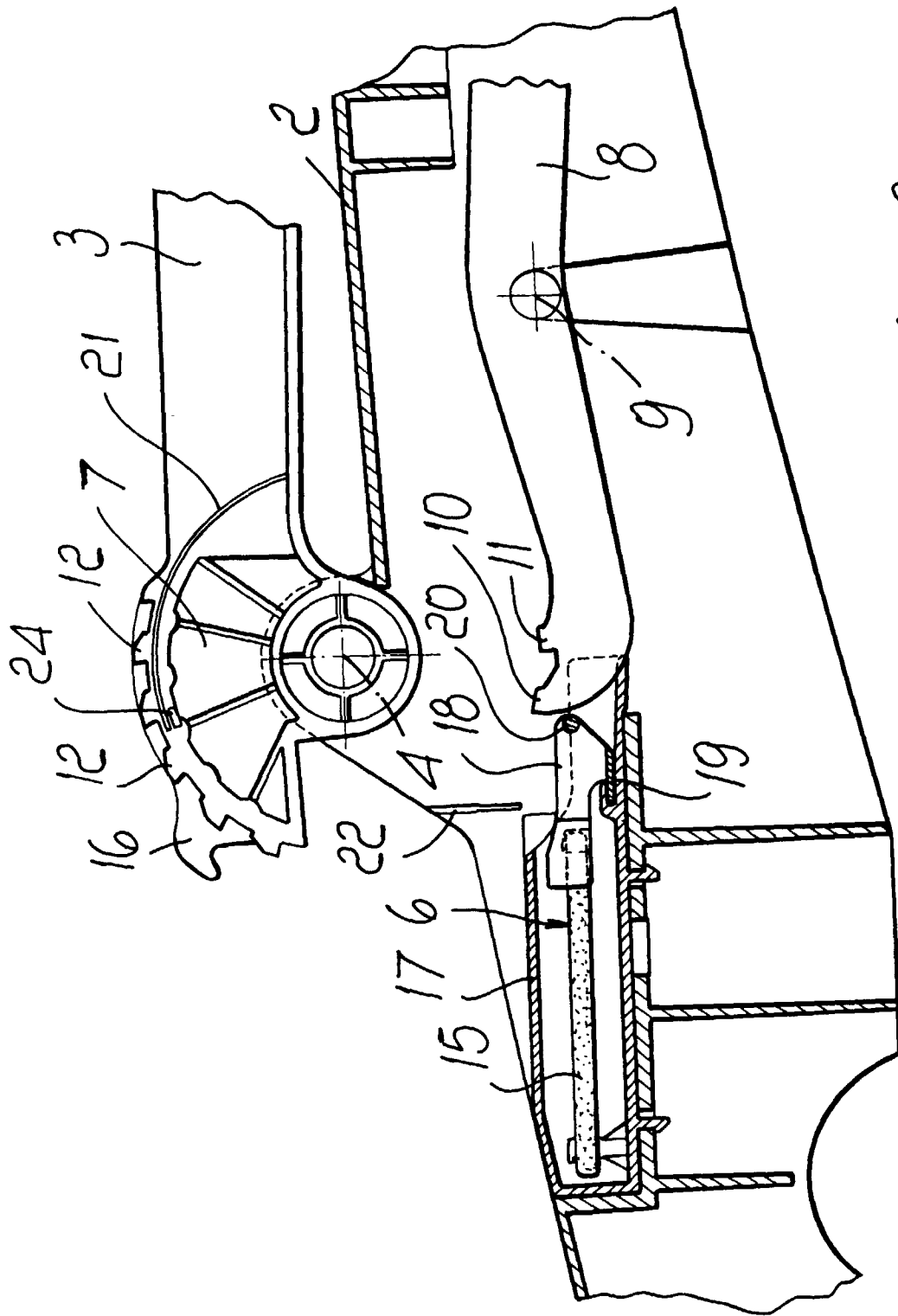
that it is substantially tangent or parallel to a tangent direction of said toothed sector, said elastically extendable element having another end which is engaged by a hook rigidly coupled to said backrest and protruding radially from said toothed sector.

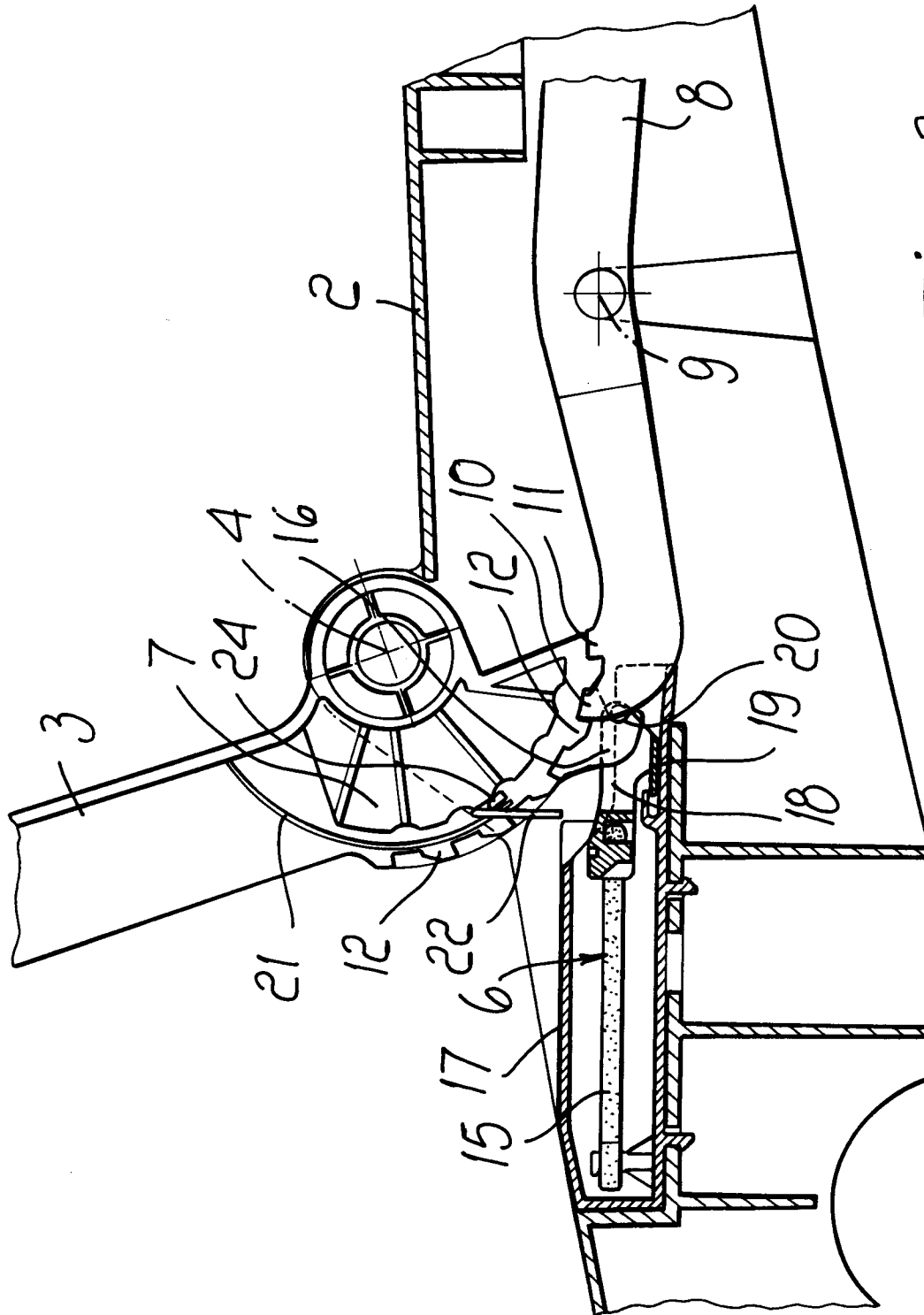
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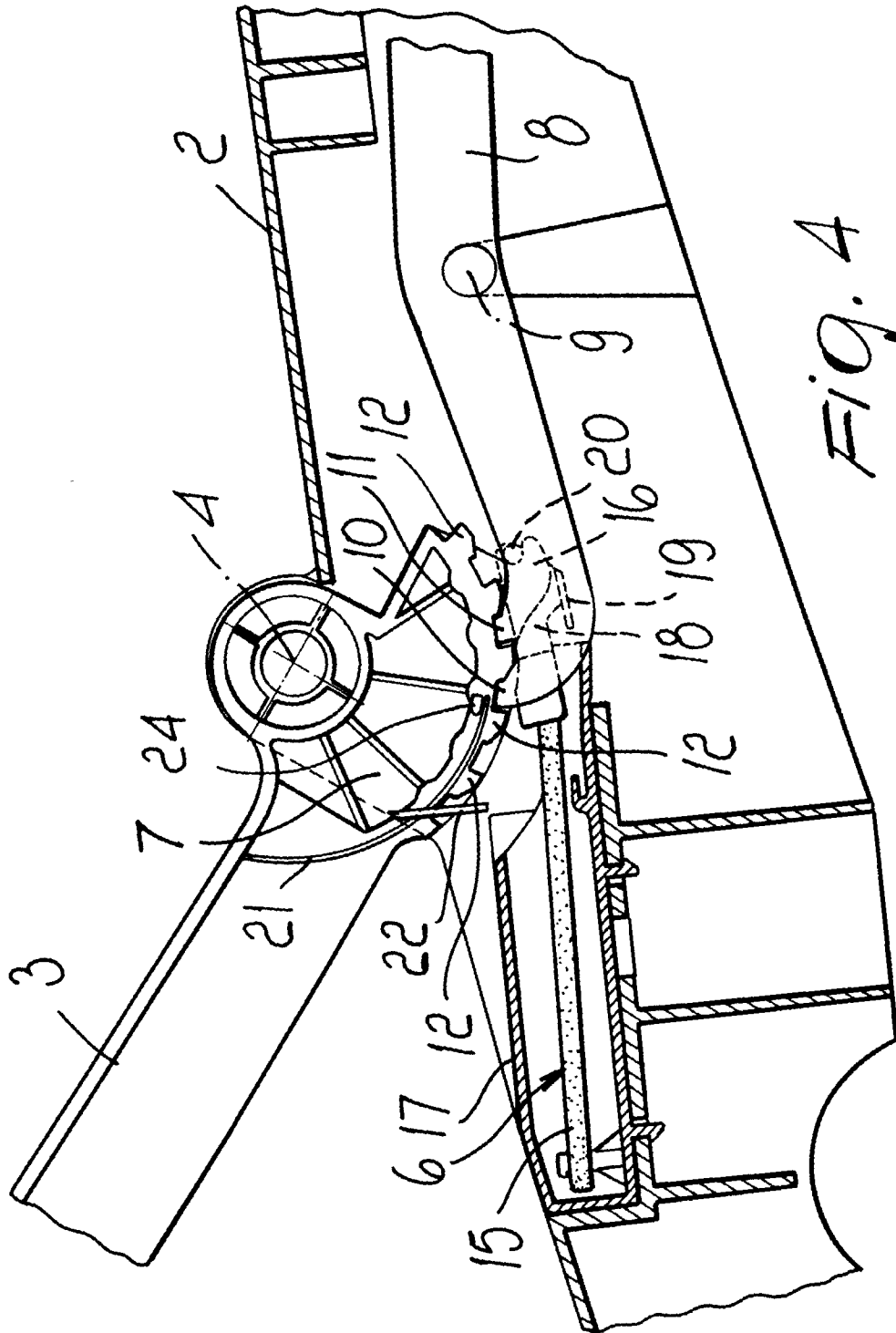
the angle between said backrest and said seat portion also when said locking lever is in a position of partial disengagement from said toothed sector.

8. The bed or chair according to claim 7, characterized in that said elastically extendable element is fixed, by means of its opposite end with respect to the one that is fixed to said seat portion, to a block which is provided with a pin for engaging said hook. 10
9. The bed or chair according to claim 8, characterized in that said elastically extendable element is accommodated in a box-like body which is associated with said seat portion, said block protruding from an end of said box-like body and being arranged proximate to said toothed sector. 15
10. The bed or chair according to claim 2, characterized in that it comprises a friction means interposed between said seat portion and said backrest and adapted to slow the rotation of said backrest about its own hinge axis by virtue of said elastic means. 20
11. The bed or chair according to claim 10, characterized in that said friction means comprises a protruding ridge which is formed on said backrest around its hinge axis and slides, with slight interference, against a ridge formed correspondingly on said seat portion. 25 30
12. The bed or chair according to claim 2, characterized in that it comprises a stop means for stopping the rotation of said backrest about its hinge axis through the action of said elastic means independently of said detent device. 35
13. The bed or chair according to claim 12, characterized in that said stop means comprises a lug rigidly coupled to said backrest and abutting against a ridge of the seat portion when said backrest is in the position for use that corresponds to a minimum angle with respect to said seat portion, said lug and/or said ridge of the seat portion being elastically deformable in order to allow said lug to move beyond said ridge in order to recline the backrest onto the seat portion. 40 45
14. The bed or chair according to claim 2, characterized in that the back of the teeth of said toothed sector has a portion which is shaped like an inclined plane and in that said tooth and said complementary tooth have, on their side directed toward the back of said teeth of the toothed sector, a correspondingly inclined configuration in order to allow the rotation of said backrest about its own hinge axis in the direction of rotation that reduces 50 55









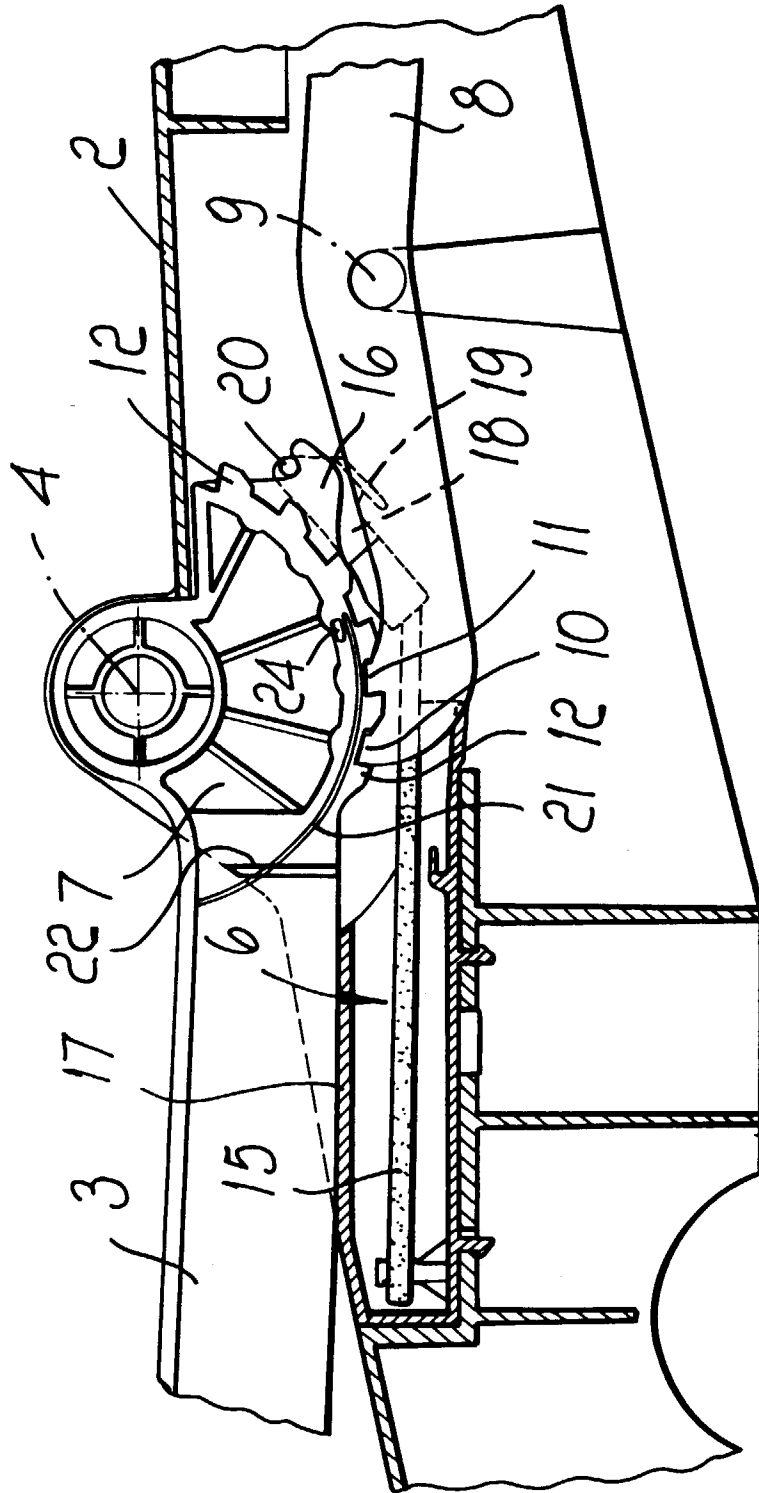


Fig. 5