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(54) **A bedchair**

(57) A bedchair (10) having a seat part (12) and a backrest part (14) which is pivotally attached to the intended rear of the seat part (12). The backrest part (14) can be secured in any selected one of a plurality of angular positions relative to the seat part (12) by means of respective interengaging portions (50,52) attached to the seat part (12) and the backrest part (14) respectively. At least one clamp (58,64,76) is arranged in relation to the interengaging portions (50,52) to be adjusted between a release position in which the interengaging portions (50,52) can be moved relative to one another to enable the relative positioning between the backrest part (14) and the seat part (12) to be altered, and a locked position

in which the interengaging portions (50,52) are locked in interengagement with one another, so as to hold the backrest part (14) in a selected angular position relative to the seat part (12). The interengaging portions (50,52) are so attached to the seat part (12) and the backrest part (14) respectively as to be able to rotate relative thereto about respective attachment axes of rotation. These axes are in alignment when the backrest part (14) is in an intended horizontal position substantially co-planar with the seat part (12), whereby the interengaging portions (50,52) together can be rotated about their aligned axes from a position above the seat (12) and backrest parts (14) to a position below them.

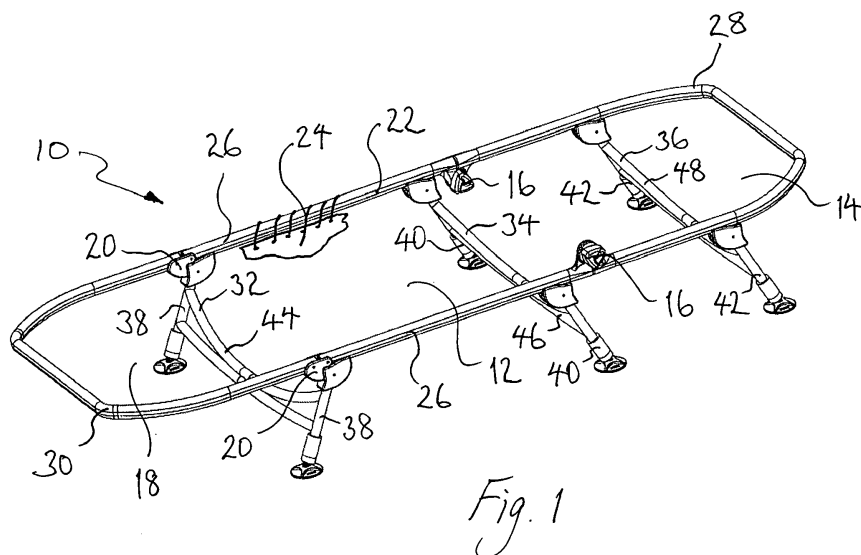


Fig. 1

Description

[0001] The present invention relates to a bedchair having a seat part and a backrest part pivotally attached to the intended rear of the seat part, in which the backrest part can be secured in any selected one of a plurality of angular positions relative to the seat part by means of respective interengaging portions attached to the seat part and the backrest part respectively and at least one clamp arranged in relation to the interengaging portions to be adjusted between a release position in which the interengaging portions can be moved relative to one another to enable the relative positioning between the backrest part and the seat part to be altered, and a locked position in which the interengaging portions are locked in interengagement with one another, so as to hold the backrest part in a selected angular position relative to the seat part.

[0002] Hitherto, such a bedchair has had the interengaging portions locked in a position substantially between the backrest part and the seat part so that, when the backrest part is locked in an intended horizontal position substantially co-planar with the seat part, the interengaging portions project upwardly and may provide uncomfortable obstructions to the elbows or arms of the user.

[0003] A first aspect of the present invention seeks to provide a remedy.

[0004] Accordingly, the first aspect of the present invention is directed to a bedchair having the construction set out in the opening paragraph of the present specification in which the interengaging portions are so attached to the seat part and the backrest part respectively as to be able to rotate relative thereto about respective attachment axes of rotation which are in alignment when the backrest part is in an intended horizontal position substantially co-planar with the seat part, whereby the interengaging portions together can be rotated about their aligned axes from a position above the seat and backrest parts to a position below them.

[0005] The peripheries of the backrest part and the seat part may be defined by elongate members. Thus, the bedchair may comprise a frame across which a sheet of material, which supports the angler when the bedchair is in use, may extend.

[0006] The elongate members may comprise tubular portions.

[0007] Each of the said interengaging portions may be provided with an elongate portion which can be slid into or over an end portion of respective tubular portions of the backrest part or the seat part respectively. Apertures may be provided in the elongate portions of the interengaging portions as well as the tubular portions they slide into or over to fix the elongate portions of the interengaging portions against rotation and against longitudinal movement relative to the tubular portions of the backrest part and the seat part respectively. The elongate portions of the interengaging portions may be rotatable axially relative to the rest of the interengaging portion of which they form a part. A spring détente may be provided to deter each elongate portion of its associated interengaging portion from axial rotation in two positions spaced apart angularly by more than 90°, for example by 180°.

[0008] In a previously proposed construction of bedchair having the construction as set out in the opening paragraph of the present specification, the clamp comprises a handle having an internally screw-threaded part engaging a spindle having an external screw thread such that when the handle is rotated in an anti-clockwise sense to release the interengaging portions from one another, it is necessary to physically pull those portions apart before rotating them relative to one another. This makes for a relatively clumsy operation often requiring both hands of the user. This can be overcome by having a saw-tooth construction in the interengaging portion so that the application of a torque to pivot the backrest part relative to the seat part causes the teeth to slide over one another. The downside of such a construction is that the teeth do not provide a sufficiently secure grip unless considerable force is applied to the handle to lock the interengaging portions together.

[0009] A second aspect of the present invention seeks to provide a remedy to these disadvantages.

[0010] According to this second aspect of the present invention there is provided a bedchair having the construction set out in the opening paragraph of the present specification in which the clamp comprises a first part which is secured to one of the interengaging portions and which is formed with a cam which is on a slant relative to the direction of relative movement between the interengaging portions from their release position to their locked position, and a second part which is secured to the other of the interengaging portions and which is formed with at least one cam follower which follows the said cam. This provides the advantage that movement of the said second part relative to the first causes the cam follower to ride along the cam so as to separate the interengaging portions.

[0011] The cam may comprise a groove, and the cam follower may comprise a spigot.

[0012] Two pairs of such interengaging portions may be provided, one pair on one side of the bedchair and the other pair on the other side of the bedchair. The interengaging portions may both have arcuate or circular parts and may be arranged so that they rotate relative to one another about a common axis of the arc and/or the circle when the relative angular positioning between the backrest and the seat parts are altered.

[0013] Preferably the said first part of the clamp is secured to an inner one of the interengaging portions.

[0014] Preferably the groove is formed around a lateral cylindrical surface of the said first part of the clamp.

[0015] Preferably the spigot is on a cylindrical surround which encompasses the cylindrical surface of the of the said first part of the clamp.

[0016] Preferably there are two such spigots engaging respective such grooves, or respective portions of the same such groove.

[0017] The interengaging portions may comprise castellations.

[0018] One of the clamp portions may be fixed to its associated interengaging portion and the other may be secured to the other of the interengaging portions so as to be rotatable in relation thereto but fixed in relation to the handle.

[0019] The angle of the slant may be such as to enable the interengaging portions to be completely released from one another with less than a full turn of the handle, for example for a turn of substantially 120° of the handle.

[0020] The interengaging portions may interengage at a position offset from the frame, and may have further interengaging parts which are brought into engagement when the backrest part is generally co-planar with the seat part, to hold the adjacent parts of the frame in alignment with one another.

[0021] A flexible elongate member may be threaded around the frame and the interengaging portions and through apertures in the sheet so that the latter is supported by the frame, and the interengaging portions may be provided with abutment surfaces to inhibit movement of the flexible elongate member out of position.

[0022] An example of a bedchair embodying both aspects of the present invention will now be described in greater detail with reference to the accompanying drawings, in which:

Figure 1 shows a perspective side view from above of a bedchair made in accordance with both aspects of the present invention;

Figure 2 shows on a different scale a perspective view of interengaging portions of the bedchair shown in Figure 1 along with a handle therefor, in a locked position;

Figure 3 is a view corresponding to that of Figure 2, but with the interengaging portions in a release position;

Figure 4 shows a perspective side view of the interengaging portions shown in Figures 2 and 3 with other parts in somewhat exploded form;

Figure 5 shows parts shown in Figure 4 in further exploded form;

Figure 6 shows on a different scale a perspective side view of a first engaging portion of the bedchair shown in Figure 1;

Figure 7 shows a perspective side view of a second engaging portion of the bedchair shown in Figure 1;

Figure 8 shows on a different scale a further

Figure 9 perspective side view of the bedchair shown in Figure 1 with parts thereof moved to a different position; shows a perspective side view from above of a bedchair as shown in Figure 1, with a cover on it; and

Figures 10 and 11 show views corresponding to those shown in Figures 2 and 3 respectively of a modified form of the portions shown therein.

[0023] A bedchair 10 shown in Figure 1 comprises a seat part 12, a backrest part 14 pivotally attached to an intended rear of the seat part 12 at respective hinges or pivots 16, and a footrest part 18 pivotally connected to an intended front of the seat part 12 by means of pivots 20.

[0024] The seat part 12, the backrest part 14 and the footrest part 18 are constituted by sections of an outer tubular frame 22 across which is stretched a fabric sheet 24. Thus, the seat part 12 is constituted by two generally parallel sections 26 of the tubular frame 22 and that portion of the sheet 24 stretched across those portions of the frame. The backrest part 14 of the bedchair 10 is constituted by a generally U-shaped part 28 of the frame 22, as well as that part of the sheet 24 which is stretched thereacross. The U-shaped part 28 has its ends pivotally attached respectively to the sections 26 of the frame 22 by means of the pivots 16. Similarly, the footrest part 18 of the bedchair 10 is constituted by a generally U-shaped part 30 of the frame 22, as well as that part of the sheet 24 stretched thereacross. The part 30 has its respective ends attached to the front ends of the sections 26 of the frame by way of the pivots 20.

[0025] Three leg arrangements 32, 34 and 36 are pivotally connected to the frame 22. Each leg arrangement has a pair of substantially parallel legs 38, 40 and 42, which extend downwardly from the frame 22. Each leg pair is reinforced by a pair of cross struts 44, 46 and 48. One of the leg arrangements 32 is connected at the front of the seat part 12, another of the leg arrangements 34 is attached to the frame 22 towards the rear of the seat part 12, and the other leg arrangement 36 is attached to the frame 22 round about half way along the backrest part 14. The leg arrangements 32 and 34 are splayed slightly away from one another to give increased stability to the bedchair 10, and the leg arrangement 36 is on a slant generally parallel to the leg arrangement 34.

[0026] It will be appreciated therefore that the bedchair 10 shown in Figure 1 with the frame 22 generally horizontal can be folded up for transport and stowage by pivoting the footrest part 18 over and on to the seat part 12 by means of the pivots 20 and the backrest part 14 can be pivoted over and on to both the footrest part 18 and the seat part 12 thus folded together, by means of the pivot 16. The leg arrangements 32, 34 and 36 in turn can be pivoted to positions in which they lie flat against this folded arrangement of the frame 22. When the bedchair 10 is next used, it can be unfolded

so that it resumes the configuration it has in Figure 1.

[0027] Further details of each pivot 16 of the bedchair 10 are shown in Figures 2 and 3. It will be appreciated that both pivots 16 are constructed in the same way with the only exception being that one is a mirror version of the other.

[0028] Thus, each pivot 16 comprises two interengaging portions 50 and 52. One of the portions 50 of the pivot 16 has an elongate part 54, an extension of which (not shown in Figures 2 and 3 but labeled 90 in Figure 4) extends into one of the sections 26 of the tubular frame 22. The other portion 52 has a corresponding elongate part 56, an extension of which (not shown in Figures 2 and 3 but labeled 92 in Figure 4) extends into one end of the generally U-shaped part 28 of the frame 22. An adjustable knob in the form of a rotatable handle 58 is also provided on the pivot 16 in a manner to be described in greater detail in relation to Figures 4 and 5. The interengaging portions 50 and 52 are provided with respective annuli of interengaging castellations 60 and 62.

[0029] Rotation of the handle 58 in an anticlockwise direction separates the interengaging portions 50 and 52 in a manner to be described with reference to Figures 4 and 5 to disengage the annuli of castellations 60 and 62. This enables the backrest part 14 to be pivoted about the pivot 16 in relation to the seat part 12. For example, in this way the backrest part 14 can be raised from the horizontal position it has as shown in Figure 1 to an angle of substantially 45° to the seat part 12. It can be locked in this position by rotating the handle 58 in a clockwise sense so that the annuli of castellations 60 and 62 become once more interengaged as shown in Figure 2.

[0030] Further details of each pivot 16 are shown in Figures 4 and 5. These Figures show more completely the annuli of castellations 60 and 62. A substantially cylindrical member 64 extends, when the pivot 16 is in the assembled state, through the annulus of castellations 60. An outer end of the cylindrical member 64 is provided with a hub 66 with inwardly directed lugs 68 which engage recesses 70 formed on the outside of the annulus of castellations 60 to lock the cylindrical member 64 against rotation about its axis relative to the portion 50. A retaining ring 72 engages the cylindrical member 64 at a shoulder portion 74 thereof to inhibit movement of the cylindrical member 64 in an axial direction relative to the annulus of castellations 60. The external surface of the cylindrical member 64 is formed with a cam in the form of a slot or groove 75 which is on a slant relative to the axis of the cylindrical member 64. A similar groove is formed on the hidden side of the cylindrical member 64 with reference to Figure 5.

[0031] Two halves 76 of a bearing shell, which have the general shape of half of a hollow cylinder, snap-fit around the outside of the cylindrical member 64 so as to be rotatable relative thereto about the axis thereof. Each bearing shell half is formed with a cam follower on its interior surface in the form of a spigot 78. The spigot engages an associated one of the grooves 75 on the cylindrical member 64. The bearing shell halves 76 are formed with a flange 80 which abuts a shoulder 82 on the inside of the annulus of castellations 62. The handle 58 is provided with an internal surface that provides a tight fit around the bearing shell halves 76 so that the handle 58 is on that side of the engagement portion 52 which is further from the engagement portion 50.

[0032] As a result, with the pivot 16 having the relative positioning of its components as shown in Figure 2, rotation of the handle 58 causes the bearing shell 76 to rotate around the cylindrical member 64 so that the spigots 78 ride along the grooves 75. As a result the bearing shell halves 76 and with them the annulus of castellations 62 and consequently the portion 52 of which these castellations form an integral part, are urged away from the annulus of castellations 60. This enables the portions 50 and 52 to be rotated relative to one another about the axis of the cylindrical member 64 upon pivoting of the backrest part 14 relative to the seat part 12 in an upward or downward direction. Once the selected relative angular position of the backrest 14 relative to the seat part 12 is obtained, the handle 58 may be rotated in a clockwise direction so that the spigots 78 return to the previous position they had in the grooves 75 so that the interengaging annuli of castellations 60 and 62 are brought together once again, the castellations interengage with one another, and the backrest part 14 is locked in this position relative to the seat part 12.

[0033] The extensions 90 and 92 of the elongate parts 54 and 56 respectively are axially rotatable between positions which are angularly spaced apart by 180°. The manner in which this is achieved is shown in Figures 6 and 7. Thus, each of the elongate parts 54 and 56 is hollow and a spindle 94 extends through this hollow in an axial direction. The spindle has a head part 96 which, when the pivot 16 is in the assembled condition as shown in Figure 2, rests against an internal shoulder 98 within the hollow elongate part 54 or 56 as the case may be. The inside surface of the head part 96 is formed with two détente recesses 98 (only one of which is visible in Figure 6) spaced apart from one another about the axis of the spindle 94 by 180°. A helical compression spring 102 is received in a blind hole 104 formed in the interior of the elongate part 54 or 56 as the case may be, as well as a détente pin 106. A wavy washer 108 is used to hold the spindle 94 in position with its head 96 abutting the internal shoulder 100. Whilst a yielding of the spring 102 enables the head 96 to adopt an angular position about the axis of the spindle 94, the pin 106 being urged by the spring 102 towards the head 96, tends to hold the spindle 94 in two positions with an angular spacing between one another of about 180° about the axis of the spindle 94, with the détente pin 106 having its outer end engaged with one or other of the recesses 98.

[0034] Each extension 90 or 92, being a projecting part of the spindle 94, is secured within an end of a tubular part 26 or 28 of the frame 22, by means of a retaining pin 110 which extends through holes provided in the relevant section of the tubular frame 22 and one end of the extension 90 or 92.

[0035] As a result, when and only when the backrest part 14 of the bedchair 10 is substantially co-planar with the seat

part 12, the pivot 16 can be flipped, swiveled or rotated about the axis of the spindles 94 from the position it has as shown in Figure 1 to a position angularly spaced therefrom by 180° so that they extend downwardly from the frame 22 instead of upwardly therefrom and no longer create an obstruction to the user's arms or elbows, as shown in Figure 8.

[0036] Figure 9 shows a view corresponding to that of Figure 1, with the bedchair 10 as shown therein provided with a cover 200 on it.

[0037] In the modification shown in Figures 10 and 11, the elongate parts 54 and 56 are provided with flanges 210 at both of their ends, and annular recesses 212 are provided at locations midway between the two flanges 210 of each part 54 and 56, apertures 214 also being provided in the interengaging portions 50 and 52 in registration with the recesses 212 respectively. This enables a flexible elongate member 216 to be threaded through holes 218 along the edge of the sheet 24 and around the annular recesses 212. The sides of the recesses 212 provide abutment surfaces which inhibit movement of the member 216 out of position. So do the flanges 210 should a part of the member 216 become dislodged from one or both of recesses 212.

[0038] A protuberance 220 projecting outwardly in a longitudinal direction and located on the axis and at that end of one of the interengaging portion 50 which is closer to the other 52, and this protuberance 220 engages a corresponding recess 222 in the other portion 52 when the backrest part 14 is generally co-planar with the seat part 12, to inhibit misalignment of the parts 54 and 56 during use of the bedchair.

[0039] Numerous variations and modifications to the illustrated invention may occur to the reader without taking the resulting construction outside of the scope of one or other of the two aspects of the present invention. For example, whereas in the illustrated construction the interengaging portion which is connected to the backrest part of the bedchair 10 is on the outside of its associated interengaging portion, it could instead be on the inside thereof, with the parts of the construction of the pivot 16 being otherwise unaltered.

Claims

1. A bedchair (10) having a seat part (12) and a backrest part (14) pivotally attached to the intended rear of the seat part (12), in which the backrest part (14) can be secured in any selected one of a plurality of angular positions relative to the seat part (12) by means of respective interengaging portions (50,52) attached to the seat part (12) and the backrest part (14) respectively and at least one clamp (58,64,76) arranged in relation to the interengaging portions (50,52) to be adjusted between a release position in which the interengaging portions (50,52) can be moved relative to one another to enable the relative positioning between the backrest part (14) and the seat part (12) to be altered, and a locked position in which the interengaging portions (50,52) are locked in interengagement with one another, so as to hold the backrest part (14) in a selected angular position relative to the seat part (12), **characterised in that** the interengaging portions (50,52) are so attached to the seat part (12) and the backrest part (14) respectively as to be able to rotate relative thereto about respective attachment axes of rotation which are in alignment when the backrest part (14) is in an intended horizontal position substantially co-planar with the seat part (12), whereby the interengaging portions (50,52) together can be rotated about their aligned axes from a position above the seat (12) and backrest parts (14) to a position below them.
2. A bedchair according to claim 1, **characterised in that** each of the said interengaging portions (50,52) is provided with an elongate portion (90,92) which can be slid into or over an end portion of respective tubular portions of the backrest part (14) or the seat part (12) respectively.
3. A bedchair according to claim 2, **characterised in that** apertures are provided in the elongate portions (90,92) of the interengaging portions (50,52) as well as the tubular portions they slide into or over to fix the elongate portions (90,92) of the interengaging portions (50,52) against rotation and against longitudinal movement relative to the tubular portions of the backrest part (14) and the seat part (12) respectively.
4. A bedchair according to claim 2 or claim 3, **characterised in that** the elongate portions (90,92) of the interengaging portions (50,52) are rotatable axially relative to the rest of the interengaging portions (50,52) of which they form a part.
5. A bedchair according to any one of claims 2 to 4, **characterised in that** a spring détente (102,106) is provided to deter each elongate portion (90,92) of its associated interengaging portion (50,52) from axial rotation in two positions spaced apart angularly by more than 90°, for example by 180°.
6. A bedchair (10) having a seat part (12) and a backrest part (14) pivotally attached to the intended rear of the seat part (12), in which the backrest part (14) can be secured in any selected one of a plurality of angular positions relative to the seat part (12) by means of respective interengaging portions (50,52) attached to the seat part (12) and the

backrest part (14) respectively and at least one clamp (58,64,76) arranged in relation to the interengaging portions (50,52) to be adjusted between a release position in which the interengaging portions (50,52) can be moved relative to one another to enable the relative positioning between the backrest part (14) and the seat part (12) to be altered, and a locked position in which the interengaging portions (50,52) are locked in interengagement with one another, so as to hold the backrest part (14) in a selected angular position relative to the seat part (12), **characterised in that** the clamp (58,64,76) comprises a first part (64) which is secured to one of the interengaging portions (50) and which is formed with a cam (75) which is on a slant relative to the direction of relative movement between the interengaging portions (50,52) from their release position to their locked position, and a second part (76) which is secured to the other of the interengaging portions (52) and which is formed with at least one cam follower (78) which follows the said cam (75).

7. A bedchair according to claim 6, **characterised in that** the cam (75) comprises a groove (75), and the cam follower (78) comprises a spigot (78).

8. A bedchair according to claim 7, **characterised in that** the groove (75) is formed around a lateral cylindrical surface of the said first part (64) of the clamp.

9. A bedchair according to claim 7 or claim 8, **characterised in that** the spigot (78) is on a cylindrical surround (76) which encompasses the cylindrical surface of the said first part (64) of the clamp.

10. A bedchair according to any one of claims 7 to 9, **characterised in that** there are two such spigots (78) engaging respective such grooves (75), or respective portions of the same such groove (75).

11. A bedchair according to any one of claims 6 to 10, **characterised in that** the interengaging portions (50,52) both have arcuate or circular parts (60,62) and are arranged so that they rotate relative to one another about a common axis of the arc and/or the circle when the relative angular positioning between the backrest (14) and the seat parts (12) are altered.

12. A bedchair according to any one of claims 6 to 11, **characterised in that** one of the clamp parts (64) is fixed to its associated interengaging portion (50) and the other (76) is secured to the other of the interengaging portions (52) so as to be rotatable in relation thereto but fixed in relation to a handle (58) of the clamp.

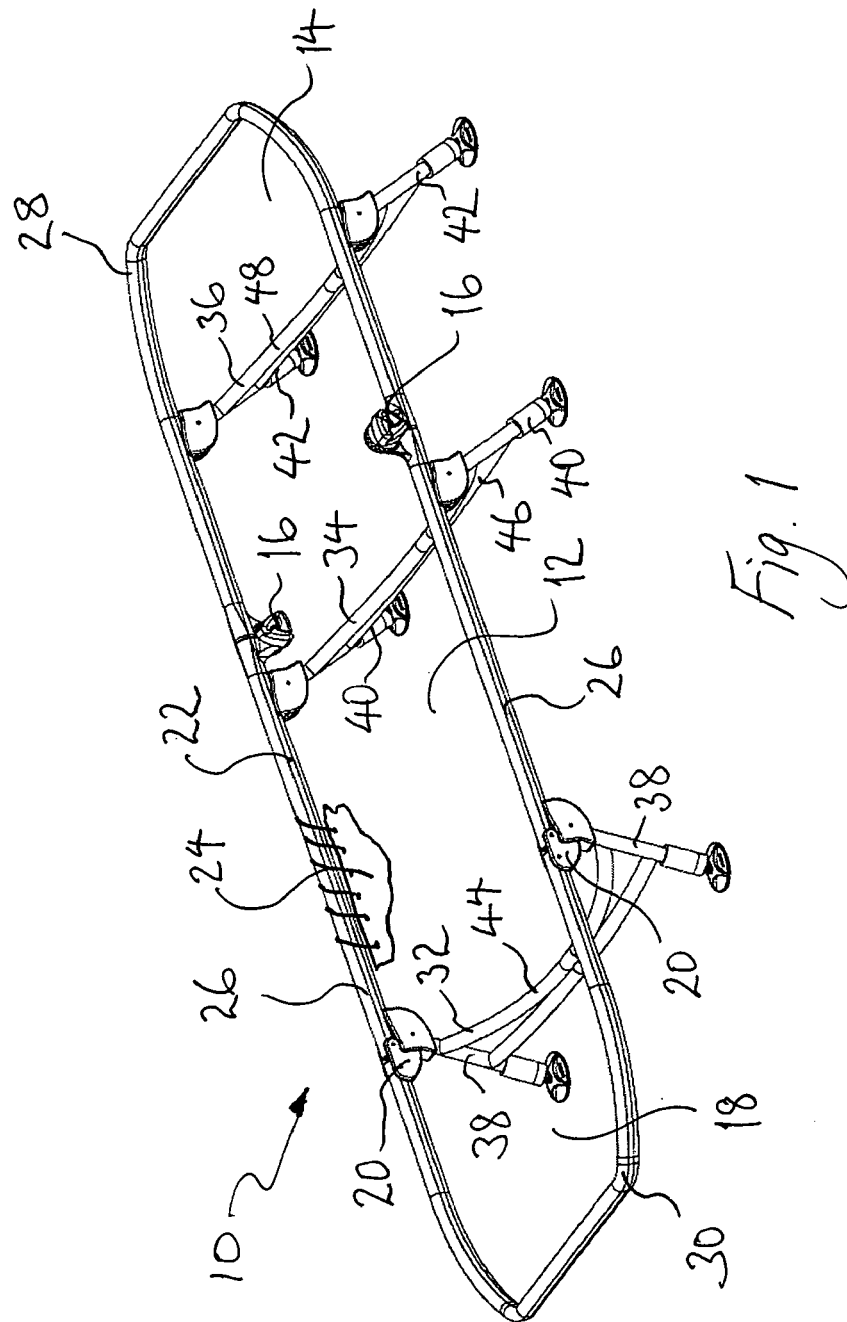
13. A bedchair according to any one of claims 6 to 12, **characterised in that** the angle of the slant is such as to enable the interengaging portions (50,52) to be completely released from one another with less than a full turn of a handle (58) of the clamp, for example for a turn of substantially 120° of the handle (58).

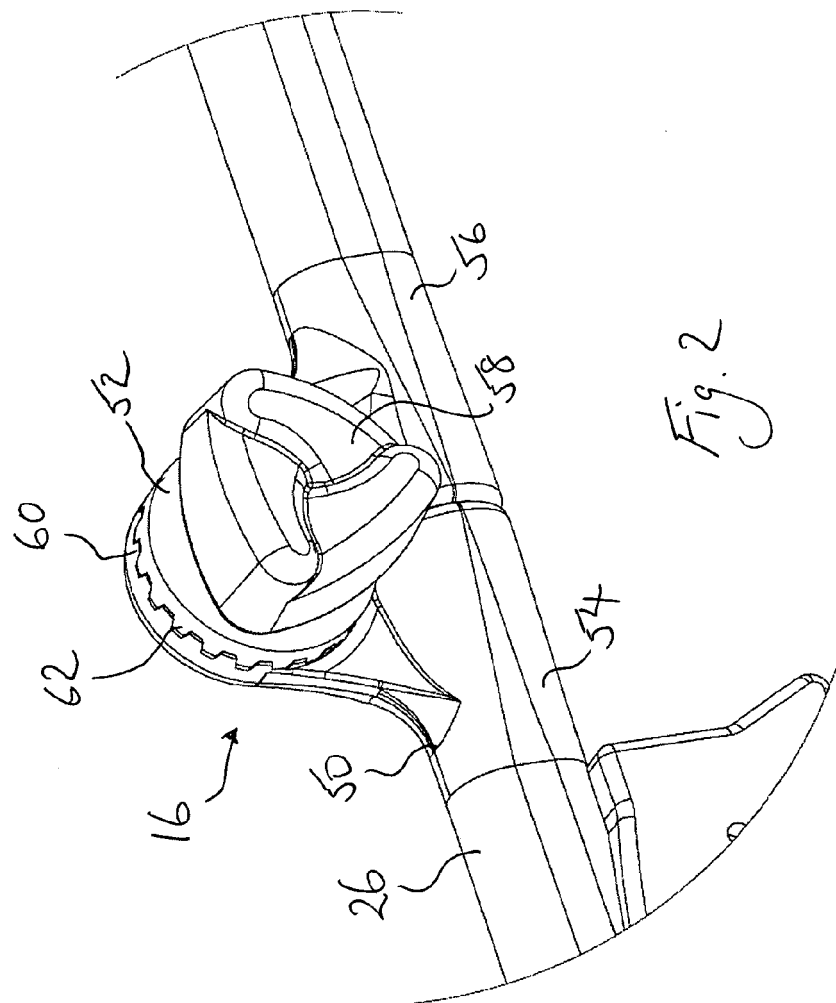
14. A bedchair according to any preceding claim, **characterised in that** it comprises a frame (22) across which a sheet (24) of material, which supports an angler when the bedchair (10) is in use, extends.

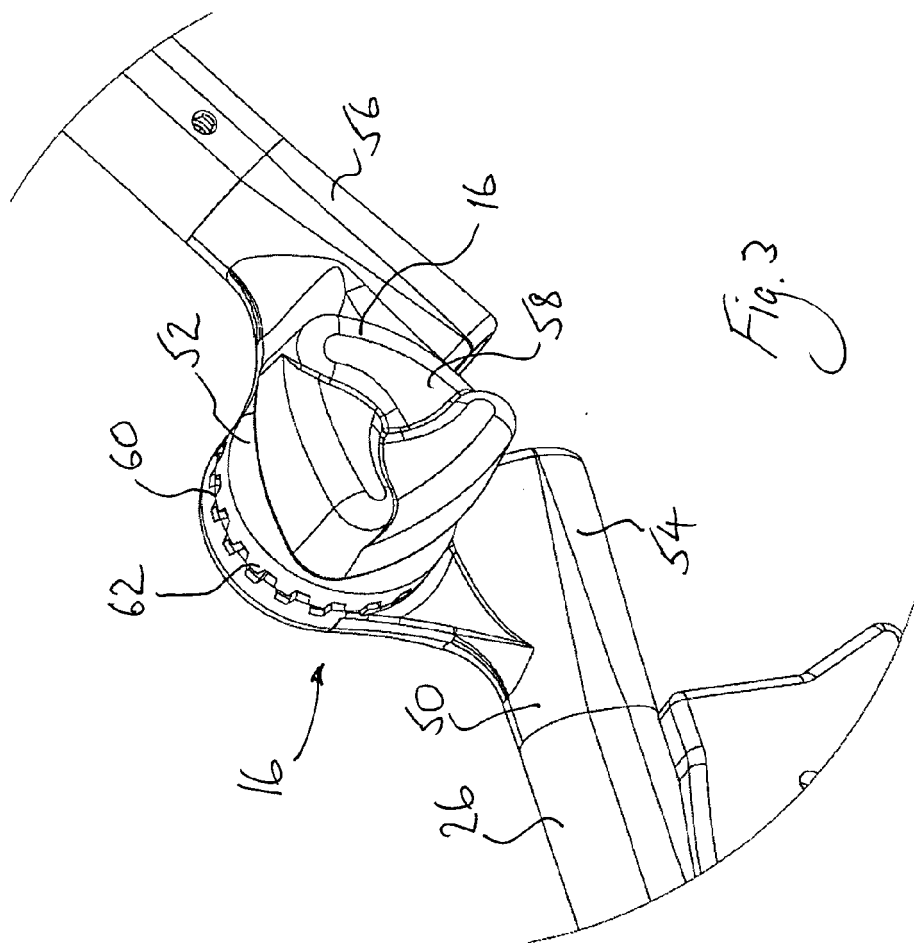
15. A bedchair according to claim 14, **characterised in that** the interengaging portions (50,52) interengage at a position offset from the frame (22), and have further interengaging parts (220,222) which are brought into engagement when the backrest part (14) is generally co-planar with the seat part (12) to hold the adjacent parts of the frame (22) in alignment with one another.

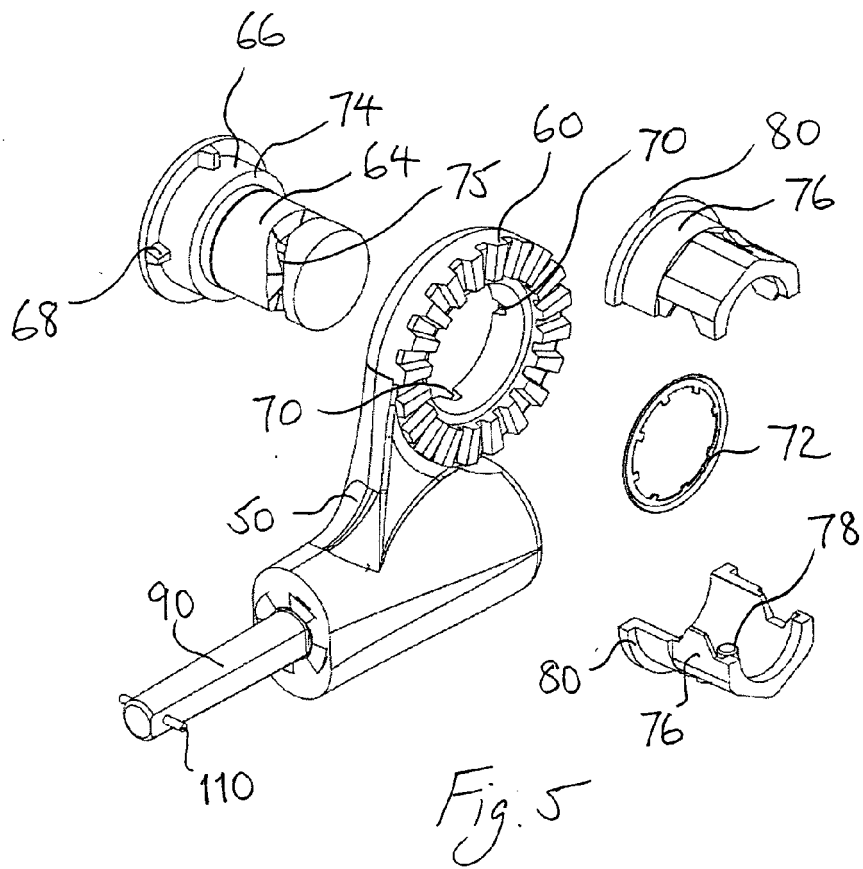
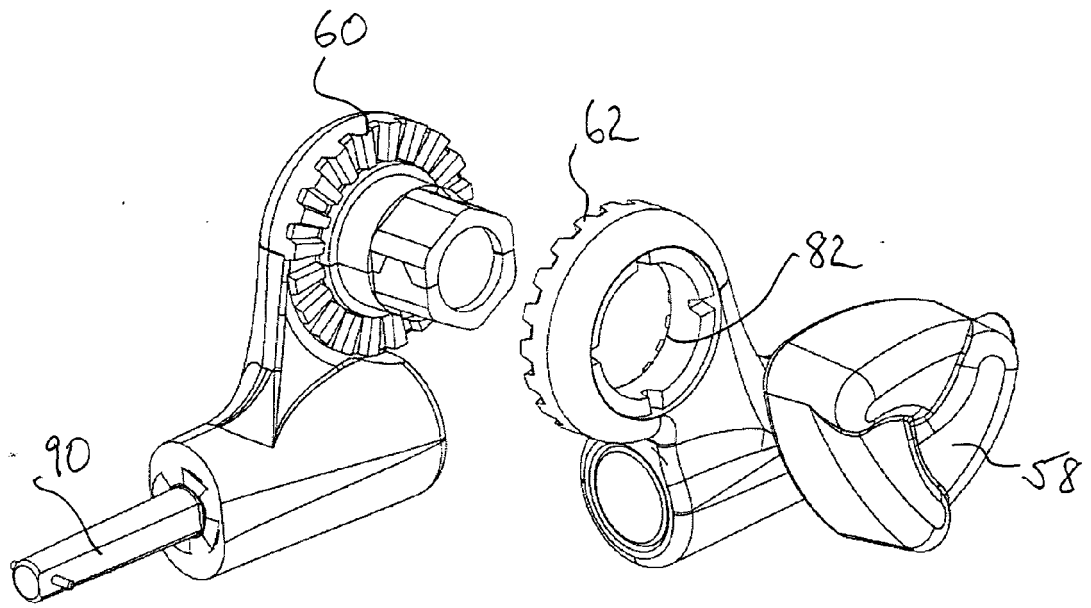
16. A bedchair according to claim 14 or claim 15, **characterised in that** a flexible elongate member (216) is threaded around the frame (22) and the interengaging portions (50,52) and through apertures (218) in the sheet (24) so that the latter is supported by the frame (22), and **in that** the interengaging portions (50,52) are provided with abutment surfaces to inhibit movement of the flexible elongate member (216) out of position.

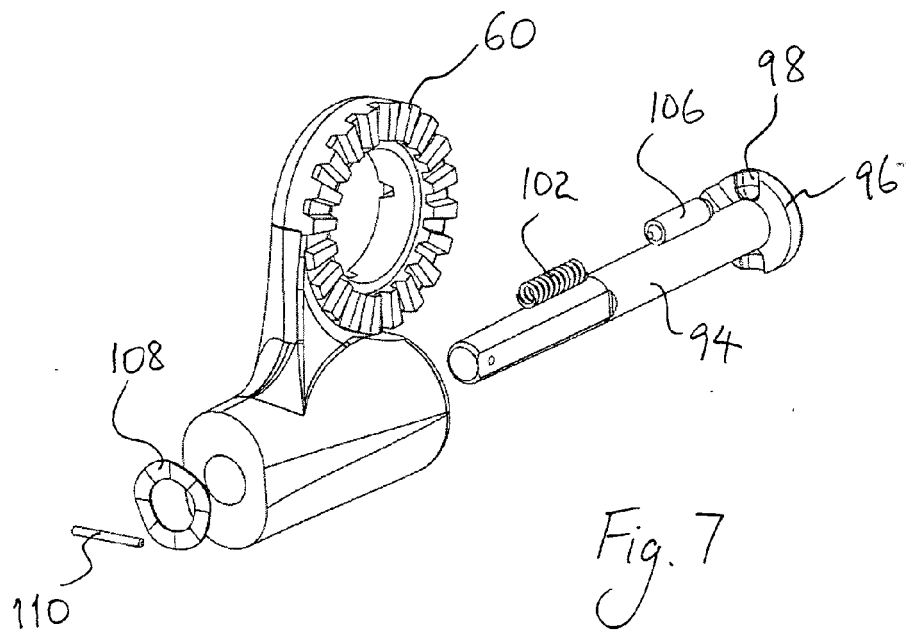
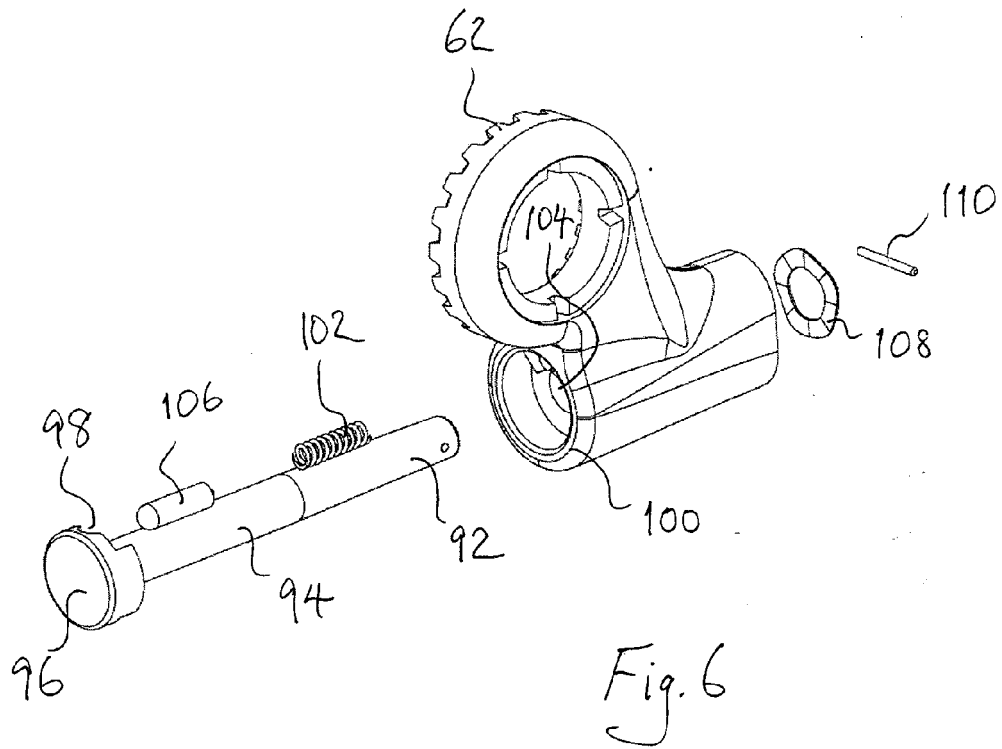
The clamp (58,64,76) comprises a first part (64) which is secured to one of the interengaging portions (50) and which is formed with a cam (75) which is on a slant relative to the direction of relative movement between the interengaging portions (50,52) from their release position to their locked position. A second part (76) is secured to the other of the interengaging portions (52) and is formed with at least one cam follower (78) which follows the said cam (75).











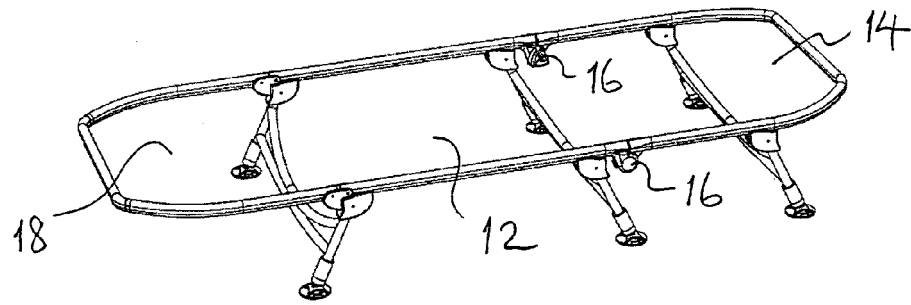


Fig. 8

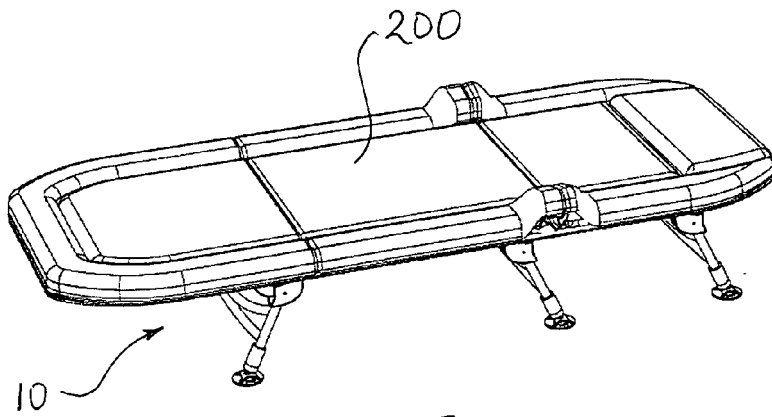


Fig. 9

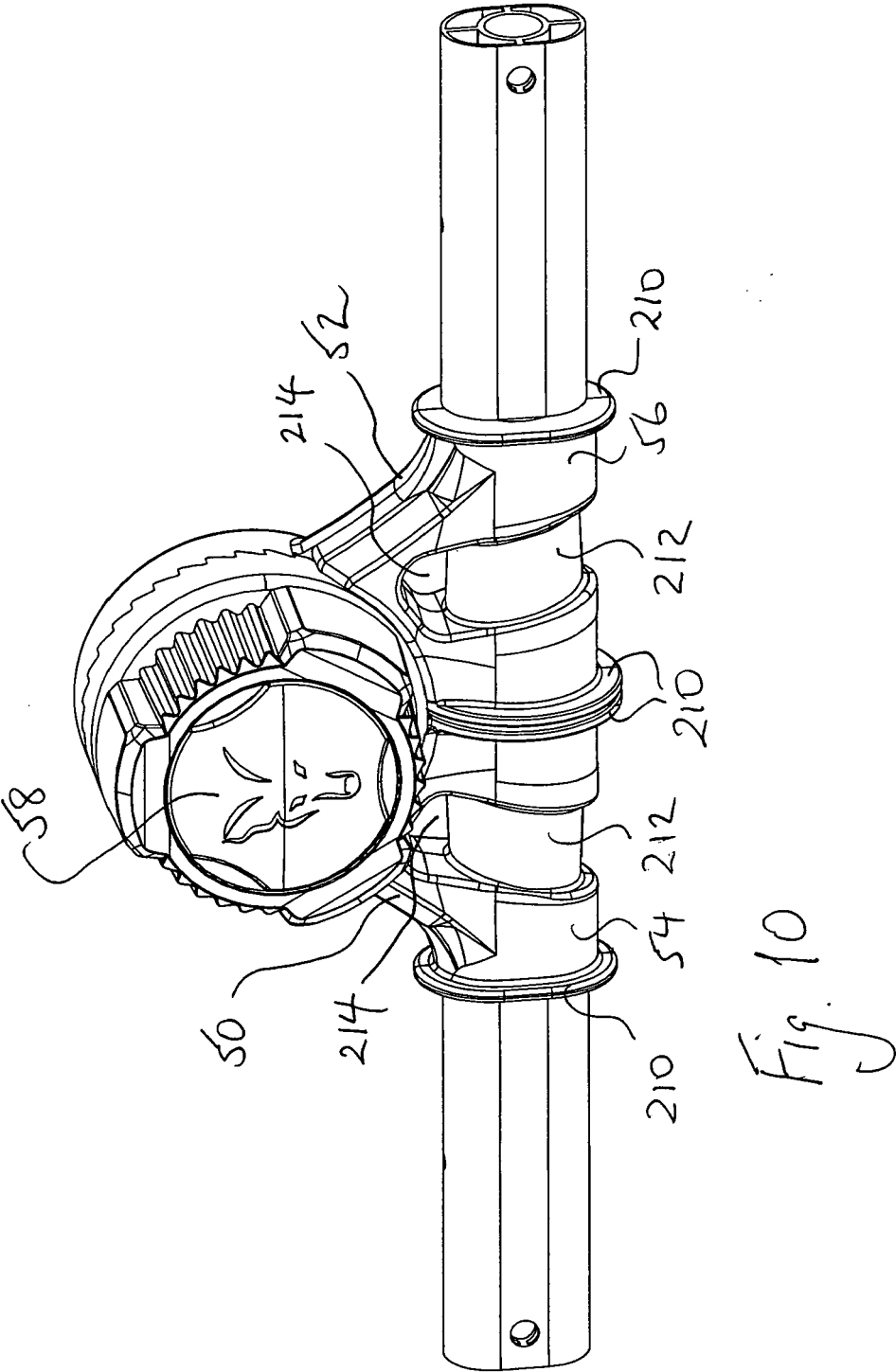


Fig. 10

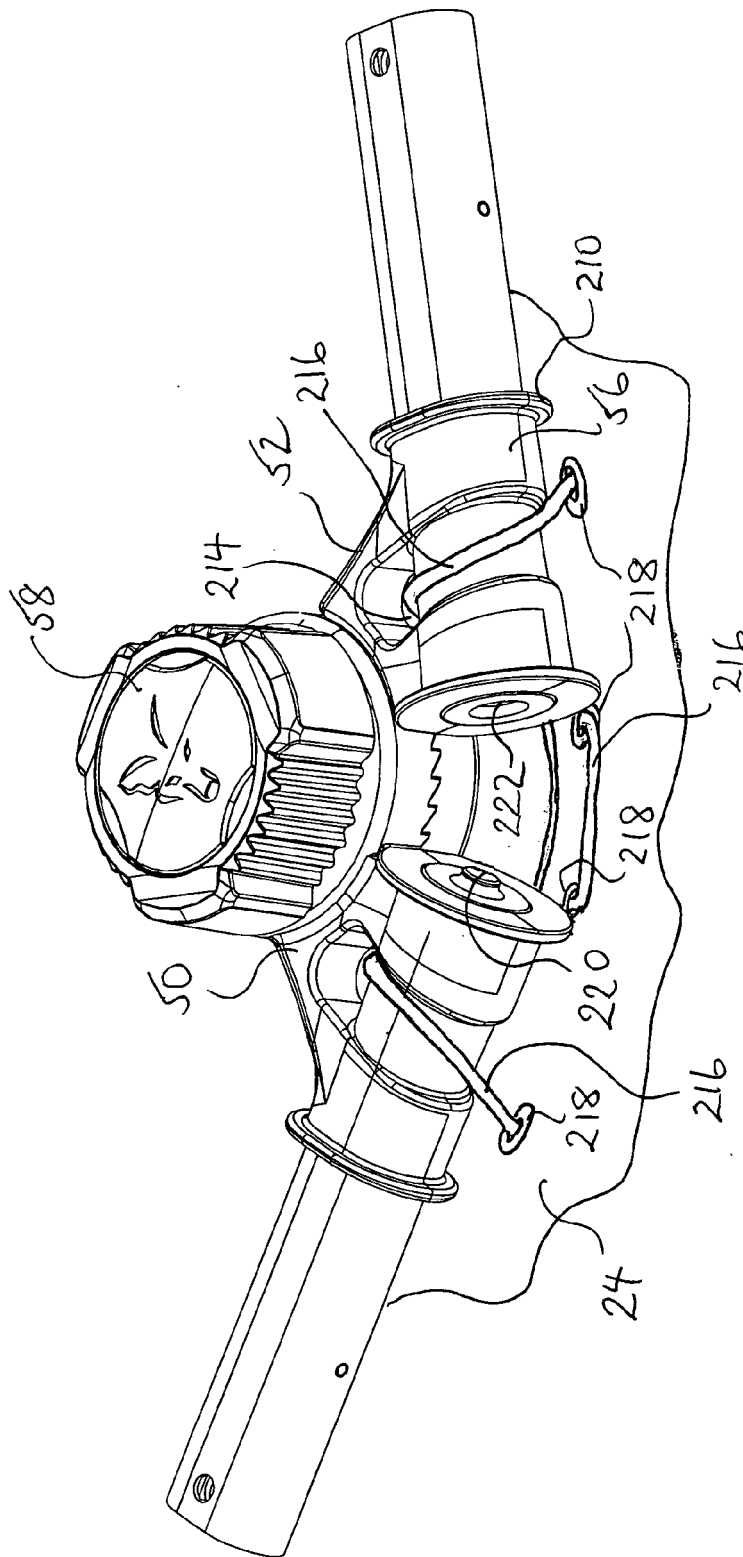


Fig. 11

**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

EP 11 25 0013

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 2 409 156 A (JRC PRODUCTS LTD [GB]) 22 June 2005 (2005-06-22) * page 11, line 10 - line 13; claim 34; figures 1-7 *	1,2,4, 14,15	INV. A47C17/70 A47C1/026
X	GB 2 344 510 A (FOX DESIGN INT [GB]) 14 June 2000 (2000-06-14) * page 6, line 5 - page 11, line 16; figures 1-6 *	1,2,4, 14,15	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47C
INCOMPLETE SEARCH			
<p>The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.</p> <p>Claims searched completely :</p> <p>Claims searched incompletely :</p> <p>Claims not searched :</p> <p>Reason for the limitation of the search: see sheet C</p>			
Place of search		Date of completion of the search	Examiner
The Hague		31 August 2011	Kus, Slawomir
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04E07)



**INCOMPLETE SEARCH
SHEET C**

Application Number

EP 11 25 0013

Claim(s) completely searchable:
1-5, 14-16

Claim(s) not searched:
6-13

Reason for the limitation of the search:

The search has been restricted to claims 1-5,14-16 indicated by the applicant in his telefax of 09.08.2011 filed in reply to the invitation pursuant to Rule 62a(1) EPC.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 25 0013

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

31-08-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2409156 A	22-06-2005	CN 1893858 A	10-01-2007
		EP 1694165 A1	30-08-2006
		GB 2424576 A	04-10-2006
		WO 2005058094 A1	30-06-2005

GB 2344510 A	14-06-2000	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82