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Octrooicentrum
Nederland

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2023964

12 B1 OCTROOI

21 Aanvraagnummer: **2023964**

51 Int. Cl.:
A47C 7/46 (2019.01)

22 Aanvraag ingediend: **4 oktober 2019**

30 Voorrang:

-

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41 Aanvraag ingeschreven:
1 juni 2021

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43 Aanvraag gepubliceerd:

-

74 Gemachtigde:

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47 Octrooi verleend:
1 juni 2021

45 Octrooischrift uitgegeven:
1 juni 2021

54 **A backrest for a seating structure**

57 A backrest (1) for a seating structure (2) comprising a frame (3) that supports a woven or nonwoven cover (4), and a lumbar support member (5) engaging a rear surface of the woven or nonwoven cover (4), wherein the lumbar support member (5) is mounted on the frame (3). The lumbar support member (5) comprises a bendable element (6) that connects to opposite sides of the frame (3). At least on one side of the bendable element (6) that connects to the frame (3), a turning knob (7) is applied that cooperates with the bendable element (6) so as to provide that the extent of bending of the bendable element (6) is adjustable by turning of the turning knob (7).

A backrest for a seating structure

The invention relates to a backrest for a seating structure comprising a frame that supports a woven or nonwoven cover, and a lumbar support member engaging a rear surface of the woven or nonwoven cover.

US 7,841,666 discloses such a backrest for a seating structure, wherein a central spine member of the seating structure supports the backrest. The central spine member further supports a lumbar support member that engages a rear surface of the backrest. The lumbar support member consists of a plurality of constituent elements, both for mounting to the central spine member, and for adjustably engaging the rear surface of the backrest.

It is an objective of the invention to provide a backrest which applies less elements, is of simpler design, is less costly, and is easier to assemble.

The backrest of the invention has the features of one or more of the appended claims.

In a first aspect of the invention the lumbar support member is mounted on the frame. This tremendously simplifies the construction of the backrest and of the complete seat, which is further promoted by several of the other features as to be discussed hereinafter.

Preferably the lumbar support member comprises a bendable element that connects to opposite sides of the frame of the backrest. The backrest of the invention can thus be simplified to the extent that the lumbar support member essentially comprises the bendable element only.

In another aspect of the invention at least on one side of the bendable element that connects to the frame, a turning knob is applied that cooperates with the bendable element so as to provide that the extent of bending of the bendable element is adjustable by turning of the turning knob. The extent of bending of the bendable element implies that the extent of engagement of the bendable element with the rear surface of the woven or nonwoven cover can be adjusted.

Manufacturing cost and ease of assembly are promoted by the preferable arrangements wherein the bendable element

comprises at least one stationary part that connects to the frame, and a movable part that connects to the stationary part and which is movable with reference to the stationary part.

5 Preferably the bendable element comprises two stationary parts that connect on opposite sides to the frame, wherein the movable part is provided between said two stationary parts.

10 The sturdiness of the construction according to the invention is promoted by arranging that the turning knob cooperates with a disc, wherein the knob and the disc are provided on opposite sides of the lumbar support member, wherein the disc is provided with a slit for receiving a protrusion from the knob, and the disc is provided with a contacting edge which has a varying distance with reference to a connection of 15 the disc with a stationary part of the bendable element, wherein said contacting edge engages directly or indirectly the movable part of the bendable element.

20 In a preferred arrangement between the contacting edge and the movable part of the bendable element a compressible element and a noncompressible element are provided, wherein the compressible element and the noncompressible element are movable in a slit provided in the movable part of the bendable element. This construction provides that the knob and the disc can be arrested in valleys of the contacting edge of 25 the disc that result from the varying distance of the contacting edge with reference to the connection of the disc with the stationary part of the bendable element, to secure the setting with the knob of a desired amount of bending of the movable part of the bendable element.

30 In still another aspect of the invention the backrest is a modular item that is removably connectable to the seating structure so as to provide a complete seat.

35 The invention will hereinafter be further elucidated with reference to the drawing of an exemplary embodiment of a backrest and seating structure according to the invention that is not limiting as to the appended claims.

In the drawing:

-figure 1 shows different views at a seat comprising a backrest and a seating structure in accordance with the in-

vention, with emphasis on the lumbar support member of the backrest; and

5 -figure 2 shows different views at a seat comprising a backrest and a seating structure in accordance with the invention, with emphasis on the modularity of the backrest.

Whenever in the figures the same reference numerals are applied, these numerals refer to the same parts.

10 With reference first to figure 1, it shows a backrest 1 for a seating structure 2 comprising a frame 3 that supports a woven or nonwoven cover 4. A lumbar support member 5 engages a rear surface of the woven or nonwoven cover 4. The lumbar support member 5 is mounted on the frame 3, and comprises a bendable element 6 that connects to opposite sides 3', 3'' of the frame 3. A preferable aspect of the invention is that the lumbar support member 5 comprises the bendable element 6 only.

15 A further aspect is that at least on one side of the bendable element 6 that connects to the frame 3 a turning knob 7 is applied that cooperates with the bendable element 6 so as to provide that the extent of bending of the bendable element 6 is adjustable by turning of the turning knob 7. In this way the level of engagement of the bendable element 6 with the rear surface of the cover 4 of the backrest 1 can be adjusted.

20 Figure 1 further shows that the bendable element 6 comprises at least one stationary part 6' that connects to the frame 3, and a movable part 6''' that connects to the stationary part 6' and which is movable with reference to the stationary part 6'. Figure 1 shows the preferred symmetrical arrangement wherein the bendable element 6 comprises two stationary parts 6', 6'' that connect on opposite sides to the frame 3, wherein the movable part 6''' is provided between said two stationary parts 6', 6''.

30 Figure 1 further shows that the turning knob 7 cooperates with a disc 8, wherein the knob 7 and the disc 8 are provided on opposite sides of the lumbar support member 5. The disc 8 is provided with a slit 9 for receiving a protrusion (not shown) from the knob 7 so as to rotationally fix the disc 8 to the knob 7. Rotation of the knob 7 will thus cause a simultaneous rotation of the disc 8. The disc 8 is further provided with a contacting edge 8' which has a varying distance

with reference to a rotatable connection 10 of the disc 8 with a stationary part 6', 6'' of the bendable element 6, wherein said contacting edge 8' engages directly or indirectly the movable part 6''' of the bendable element 6. The point of contact of the contacting edge 8' of the rotatable disc 8 with the movable part 6''' of the bendable element 6 thus determines the extent of bending of said movable part 6''' of the bendable element 6. Preferably between the contacting edge 8' and the movable part 6''' of the bendable element 6 a compressible element 12 and a noncompressible element 13 are provided, wherein the compressible element 12 and the noncompressible element 13 are movable in a slit 14 provided in the movable part 6''' of the bendable element 6. The compressible element 12 is then locked within the slit 14 by the noncompressible element 13. This construction provides that the knob 7 and the disc 8 can be arrested in valleys of the contacting edge 8' of the disc 8 that result from the varying distance of the contacting edge 8' with reference to the connection 10 of the disc 8 with the stationary part 6', 6'' of the bendable element 6, to secure the setting with the knob 7 of a desired amount of bending of the movable part 6''' of the bendable element 6. Reference 15 refers to a contacting surface within the knob 7 which contacts a notch 11 provided on the movable part 6''' of the bendable element 6, and which secures that the contacting edge 8' of the disc 8 always maintains contact with the movable part 6''', independent of the pressure that during use is applied to the bendable element 6.

Finally reference is made to figure 2 which shows that the backrest 1 is a modular item that is removably connectable to the seating structure 2 so as to provide a complete seat.

Although the invention has been discussed in the foregoing with reference to an exemplary embodiment of the backrest for a seating structure of the invention, the invention is not restricted to this particular embodiment which can be varied in many ways without departing from the invention. The discussed exemplary embodiment shall therefore not be used to construe the appended claims strictly in accordance therewith. On the contrary the embodiment is merely intended to ex-

plain the wording of the appended claims without intent to limit the claims to this exemplary embodiment. The scope of protection of the invention shall therefore be construed in accordance with the appended claims only, wherein a possible ambiguity in the wording of the claims shall be resolved using this exemplary embodiment.

Aspects of the invention are itemized in the following section.

1. A backrest (1) for a seating structure (2) comprising a frame (3) that supports a woven or nonwoven cover (4), and a lumbar support member (5) engaging a rear surface of the woven or nonwoven cover (4), characterized in that the lumbar support member (5) is mounted on the frame (3).
2. The backrest of claim 1, characterized in that the lumbar support member (5) comprises a bendable element (6) that connects to opposite sides of the frame (3).
3. The backrest of claim 1 or 2, characterized in that the lumbar support member (5) comprises the bendable element (6) only.
4. The backrest of any one of claims 1 - 3, characterized in that at least on one side of the bendable element (6) that connects to the frame (3) a turning knob (7) is applied that cooperates with the bendable element (6) so as to provide that the extent of bending of the bendable element (6) is adjustable by turning of the turning knob (7).
5. The backrest of claim 4, characterized in that the bendable element (6) comprises at least one stationary part (6') that connects to the frame (3), and a movable part (6'') that connects to the stationary part (6') and which is movable with reference to the stationary part (6').
6. The backrest of claim 4 or 5, characterized in that the bendable element (6) comprises two stationary parts (6', 6'') that connect on opposite sides to the frame (3), wherein the movable part (6'') is provided between said two stationary parts (6', 6'').
7. The backrest of claim 5 or 6, characterized in that the turning knob (7) cooperates with a disc (8), wherein the knob (7) and the disc (8) are provided on opposite sides of the lumbar support member (5), wherein the disc (8) is

provided with a slit (9) for receiving a protrusion from the knob (7), and the disc (8) is provided with a contacting edge (8') which has a varying distance with reference to a connection (10) of the disc (8) with a stationary part (6', 6'') of the bendable element (6), wherein said contacting edge (8') engages directly or indirectly the movable part (6''') of the bendable element (6).

8. The backrest of claim 7, characterized in that between the contacting edge (8') and the movable part (6''') of the bendable element (6) a compressible element (12) and a noncompressible element (13) are provided, wherein the compressible element (12) and the noncompressible element (13) are movable in a slit (14) provided in the movable part 6''' of the bendable element (6).

9. The backrest of any one of claims 1 - 8, characterized in that the backrest (1) is a modular item that is removably connectable to the seating structure (2) so as to provide a complete seat.

CONCLUSIES

1. Rugleuning (1) voor een zitconstructie (2) omvat-
tende een frame (3) dat een geweven of niet-geweven bekleding
(4) ondersteunt, en een lendensteunelement (5) dat aangrijpt
op een achteroppervlak van de geweven of niet-geweven bekle-
ding (4), **met het kenmerk, dat** het lendensteunonderdeel (5) op
5 het frame (3) is gemonteerd.

2. Rugleuning volgens conclusie 1, **met het kenmerk,**
dat het lendensteunelement (5) een buigbaar element (6) omvat
dat aansluit op tegenoverliggende zijden van het frame (3).

10 3. Rugleuning volgens conclusie 1 of 2, **met het ken-**
merk, dat het lendensteunelement (5) alleen het buigbare ele-
ment (6) omvat.

4. Rugleuning volgens één van de conclusies 1 - 3,
met het kenmerk, dat ten minste aan een zijde van het buigbare
15 element (6) dat aansluit op het frame (3) een draaiknop (7) is
voorzien die samenwerkt met het buigbare element (6) om er in
te voorzien dat de mate van buiging van het buigbare element
(6) instelbaar is door het draaien van de draaiknop (7).

5. Rugleuning volgens conclusie 4, **met het kenmerk,**
20 **dat** het buigbare element (6) ten minste een stationair deel
(6') omvat dat aansluit op het frame (3), en een beweegbaar
deel (6'') dat aansluit op de stationair deel (6') en dat be-
weegbaar is ten opzichte van het stationaire deel (6').

6. Rugleuning volgens conclusie 4 of 5, **met het ken-**
25 **merk, dat** het buigbare element (6) twee stationaire delen (6',
6'') omvat die aan tegenoverliggende zijden aansluiten op het
frame (3), waarbij het beweegbare deel (6''') is aangebracht
tussen de twee stationaire delen (6', 6'').

7. Rugleuning volgens conclusie 5 of 6, **met het ken-**
30 **merk, dat** de draaiknop (7) samenwerkt met een schijf (8),
waarbij de knop (7) en de schijf (8) zijn aangebracht aan te-
genoverliggende zijden van het lendensteunelement (5), en
waarbij de schijf (8) is voorzien van een sleuf (9) voor het
opnemen van een uitsteeksel van de knop (7), en de schijf (8)
35 is voorzien van een contactrand (8') die een variërende af-
stand bezit ten opzichte van een verbinding (10) van de schijf
(8) met een stationair deel (6', 6'') van het buigbare element

(6), waarbij genoemde contactrand (8') direct of indirect aangrijpt op het beweegbare deel (6'') van het buigbare element (6).

5 8. Rugleuning volgens conclusie 7, **met het kenmerk,**
dat tussen de contactrand (8') en het beweegbare deel (6'')
van het buigbare element (6) een samendrukbaar element (12) en
een niet-samendrukbaar element (13) zijn voorzien, waarbij het
samendrukbare element (12) en het niet-samendrukbare element
10 (13) beweegbaar zijn opgenomen in een sleuf (14) die is aange-
bracht in het beweegbare deel (6''') van het buigbare element
(6).

 9. Rugleuning volgens één van de conclusies 1-8, **met**
het kenmerk, dat de rugleuning (1) een modulair onderdeel is
dat verwijderbaar verbindbaar is met de zitconstructie (2)
15 voor het verschaffen van een volledige zitting.

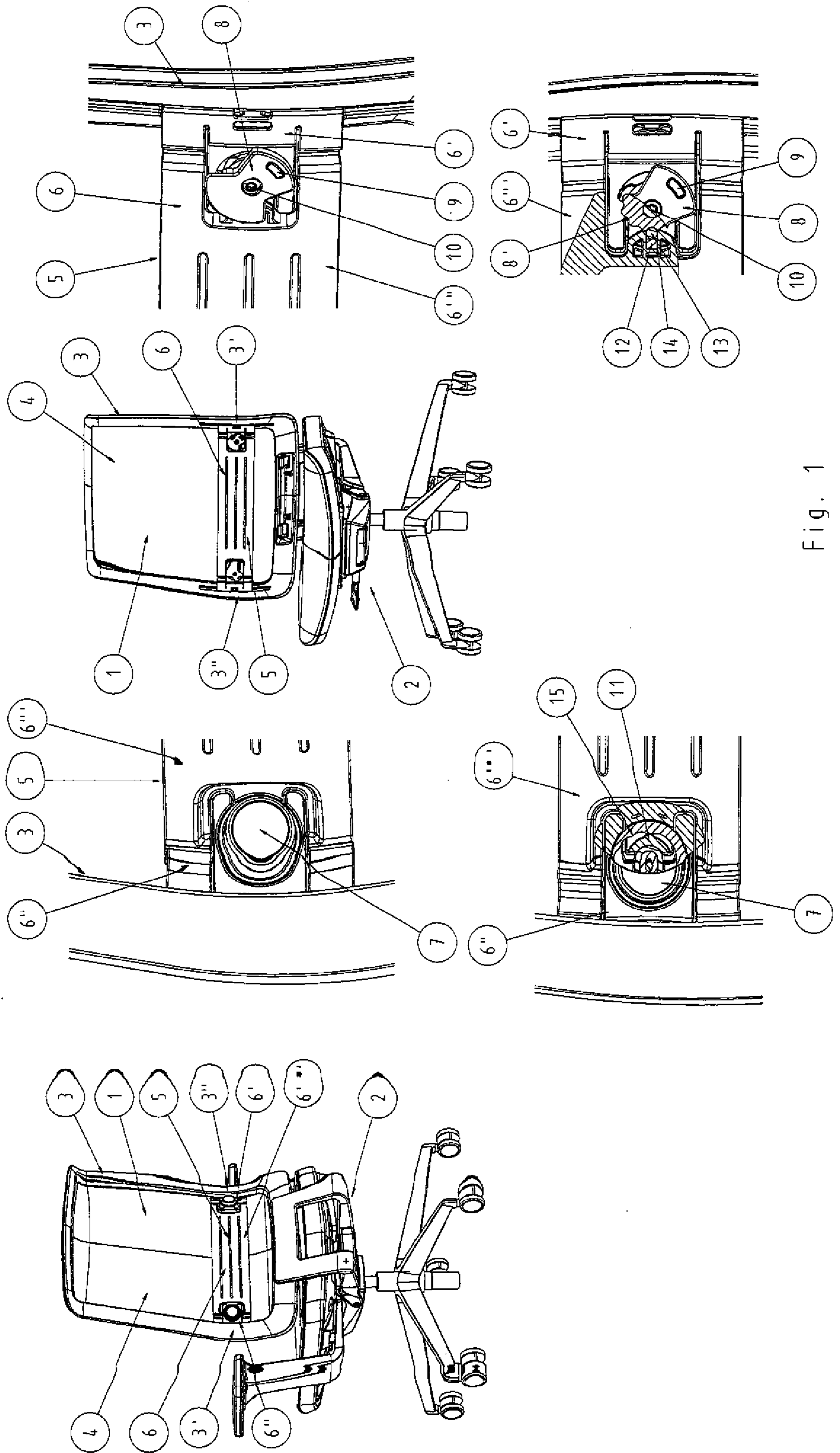


Fig. 1

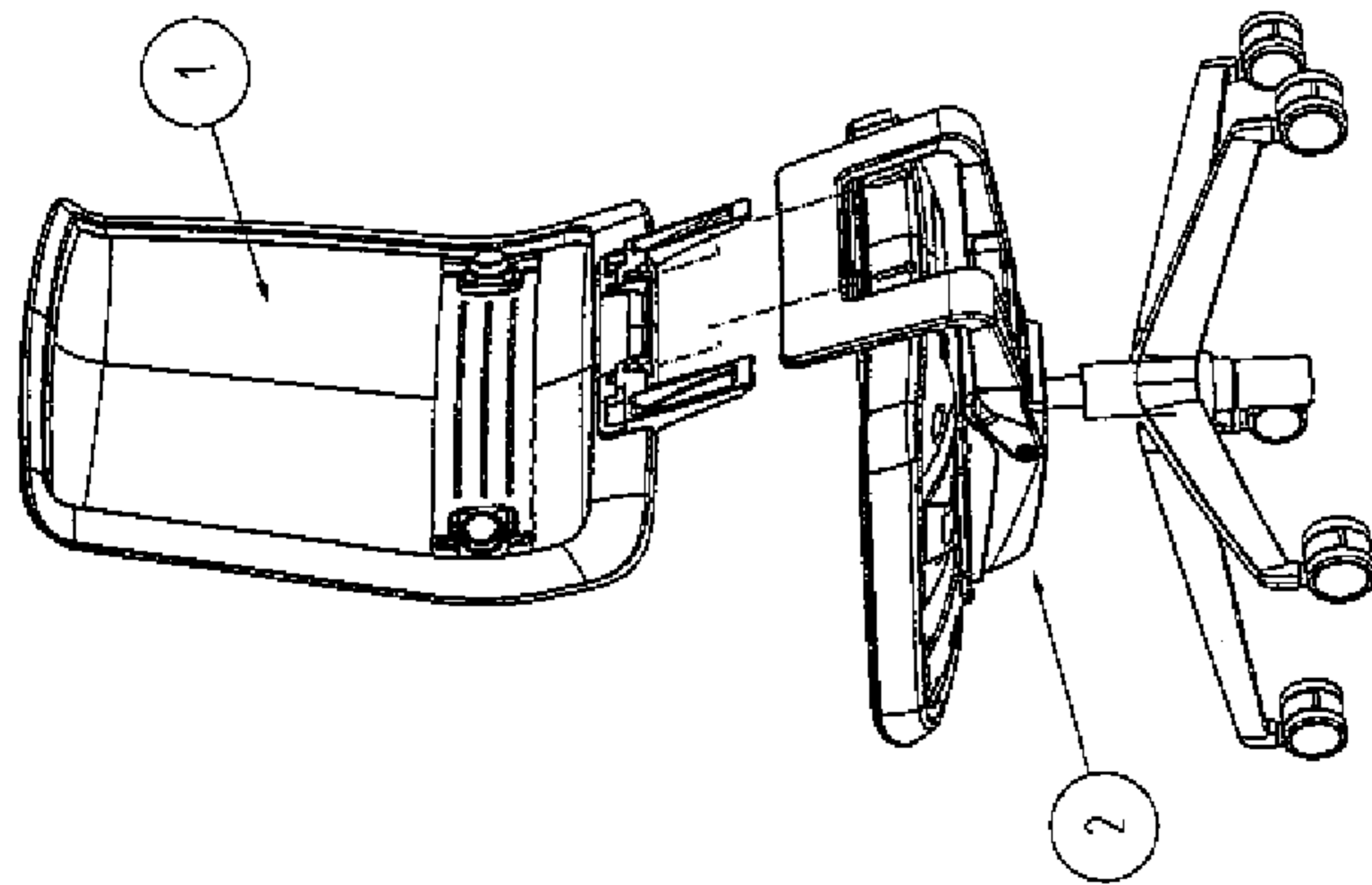
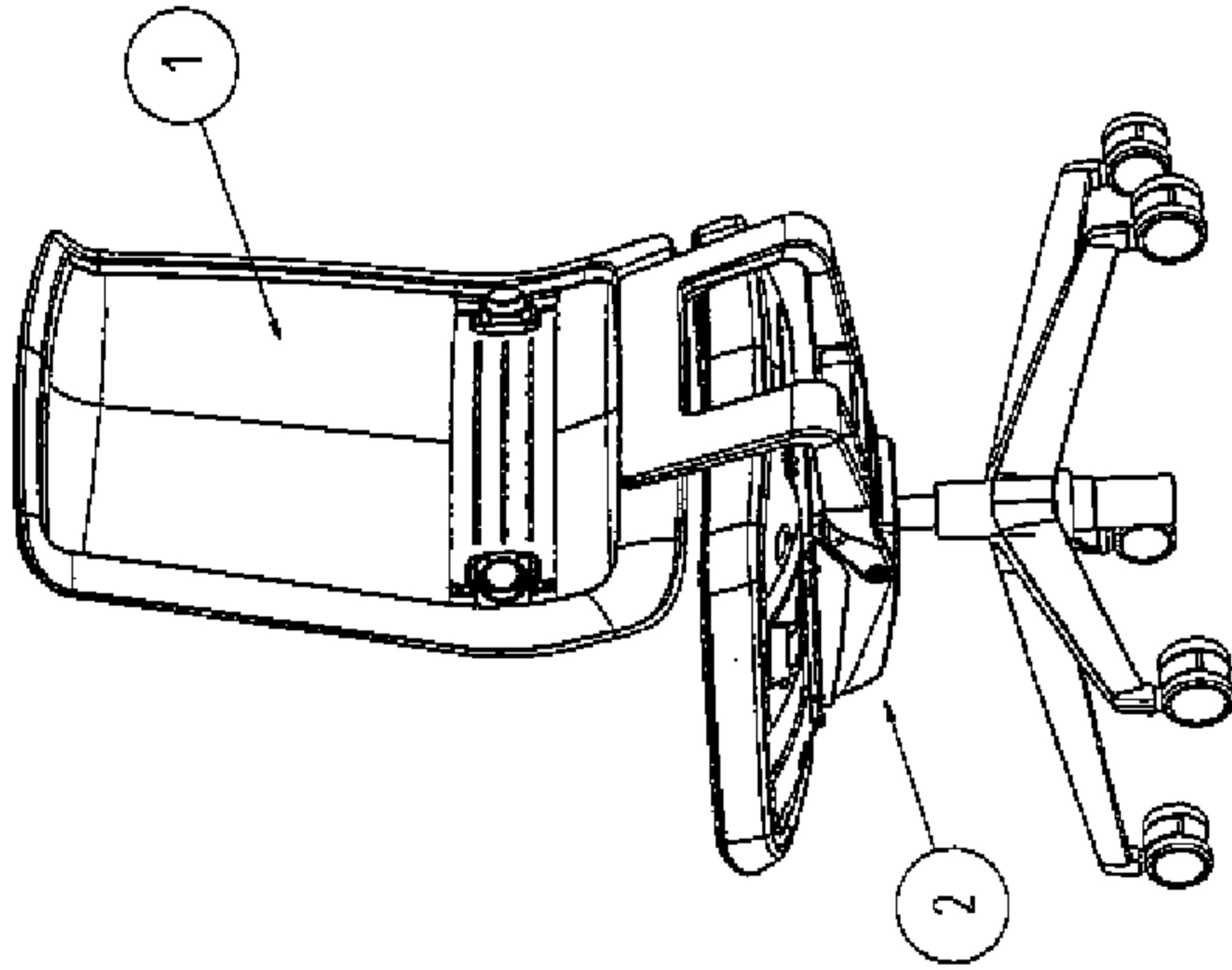
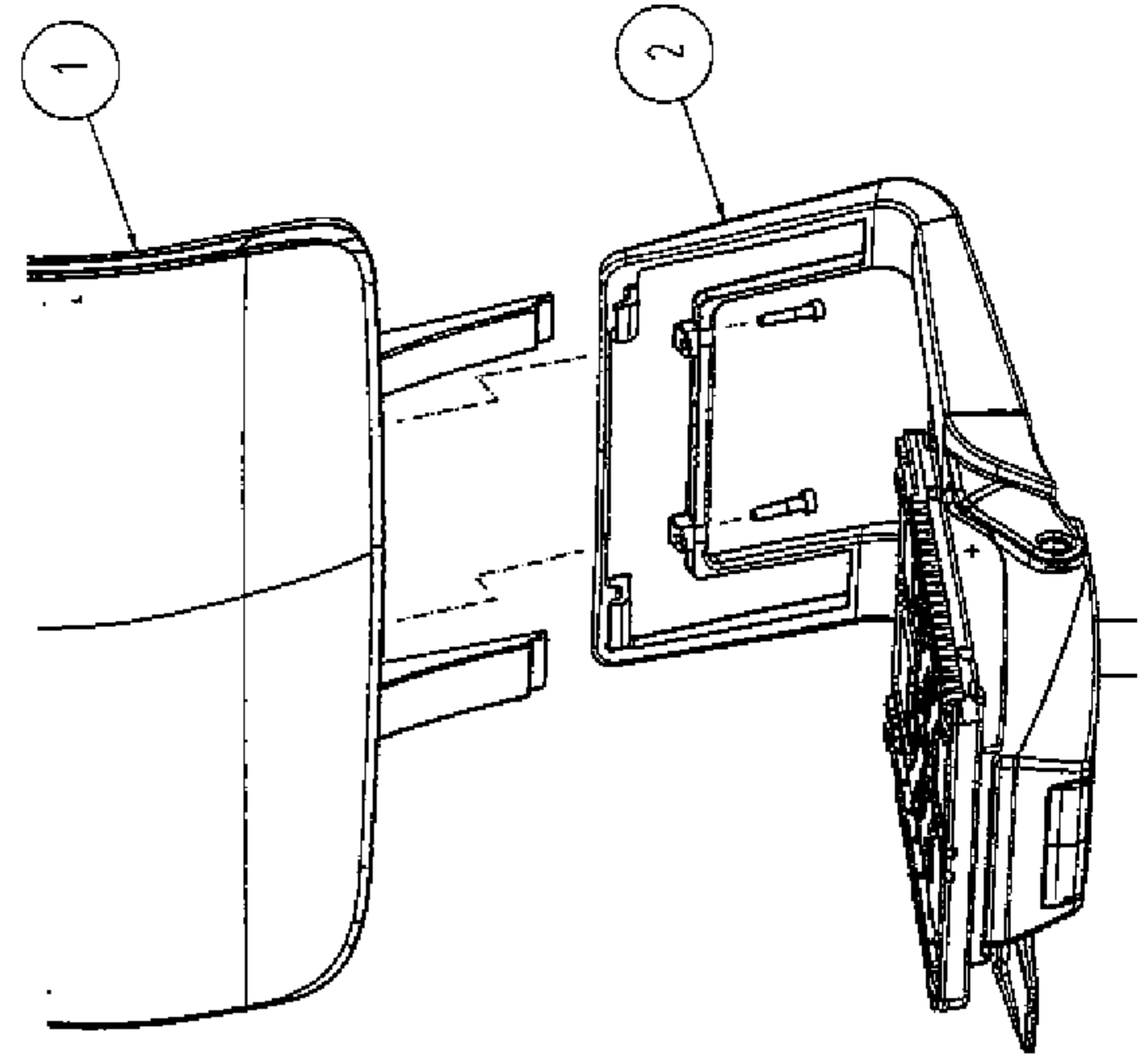
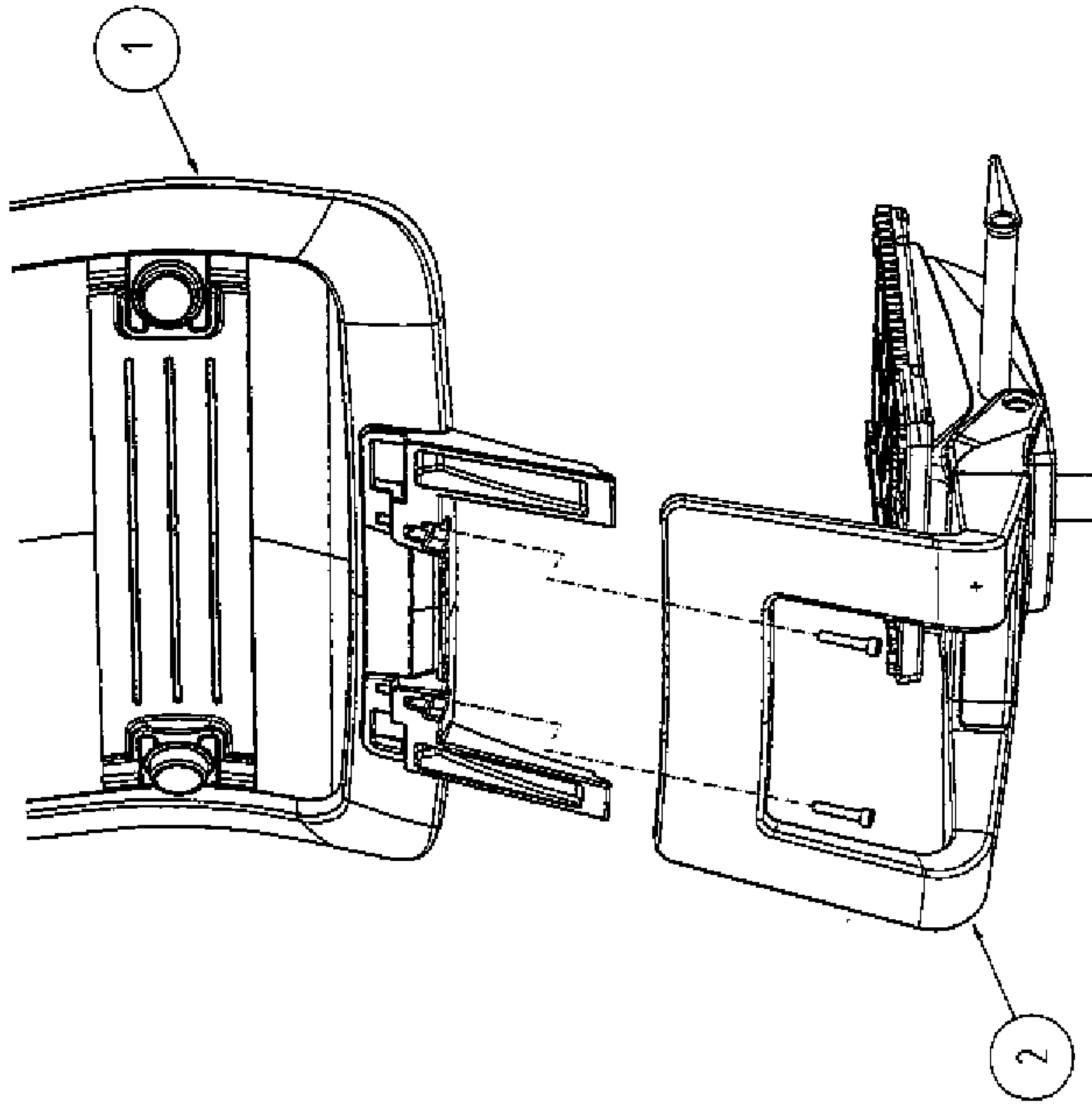


Fig. 2

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE 018982NL-PD
Nederlands aanvraag nr. 2023964	Indieningsdatum 04-10-2019
	Ingeroepen voorrangdatum
Aanvrager (Naam) Koninklijke Ahrend B.V.	
Datum van het verzoek voor een onderzoek van internationaal type 02-12-2019	Door de Instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr. SN74958
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)	
Volgens de internationale classificatie (IPC) A47C7/46	
II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK	
Onderzochte minimumdocumentatie	
Classificatiesysteem	Classificatiesymbolen
IPC	A47C
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen	
III. <input type="checkbox"/>	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)
IV. <input type="checkbox"/>	GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 2023964

A. CLASSIFICATIE VAN HET ONDERWERP INV. A47C7/46 ADD.		
Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.		
B. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK		
Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen) A47C		
Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen		
Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden) EPO-Internal, WPI Data		
C. VAN BELANG GEACHTE DOCUMENTEN		
Categorie °	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	KR 101 635 492 B1 (DAWON CHAIRS CO LTD [KR]) 1 juli 2016 (2016-07-01) * alinea [0025] - alinea [0039]; figuren 1-5 *	1-9
X	----- KR 101 730 020 B1 (CHAIR MEISTER CO LTD [KR]) 25 april 2017 (2017-04-25) * alinea [0028] - alinea [0053]; figuren 1-7 *	1-9
X	----- JP 2015 093031 A (KOKUYO FURNITURE CO LTD) 18 mei 2015 (2015-05-18) * alinea [0024] - alinea [0121]; figuren 1-26 *	1-9
<input type="checkbox"/> Verdere documenten worden vermeld in het vervolg van vak C. <input checked="" type="checkbox"/> Leden van dezelfde octrooifamilie zijn vermeld in een bijlage		
° Speciale categorieën van aangehaalde documenten "A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft "D" in de octrooiaanvraag vermeld "E" eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven "L" om andere redenen vermelde literatuur "O" niet-schriftelijke stand van de techniek "P" tussen de voorrangdatum en de indieningsdatum gepubliceerde literatuur		"T" na de indieningsdatum of de voorrangdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding "X" de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur "Y" de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht "&" lid van dezelfde octrooifamilie of overeenkomstige octrooipublicatie
Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid 18 december 2019		Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type
Naam en adres van de instantie European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		De bevoegde ambtenaar Kus, Slawomir

**ONDERZOEKSRAPPORT BETREFFENDE HET
 RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
 VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
 de stand van de techniek

NL 2023964

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
KR 101635492	B1	01-07-2016	GEEN

KR 101730020	B1	25-04-2017	GEEN

JP 2015093031	A	18-05-2015	JP 6301111 B2 28-03-2018
			JP 2015093031 A 18-05-2015

WRITTEN OPINION

File No. SN74958	Filing date (<i>day/month/year</i>) 04.10.2019	Priority date (<i>day/month/year</i>)	Application No. NL2023964
International Patent Classification (IPC) INV. A47C7/46			
Applicant Koninklijke Ahrend B.V.			

This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the application
- Box No. VIII Certain observations on the application

	Examiner Kus, Slawomir
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WRITTEN OPINION**Box No. I Basis of this opinion**

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - a sequence listing
 - table(s) related to the sequence listing
 - b. format of material:
 - on paper
 - in electronic form
 - c. time of filing/furnishing:
 - contained in the application as filed.
 - filed together with the application in electronic form.
 - furnished subsequently for the purposes of search.
3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	
	No: Claims	1-9
Inventive step	Yes: Claims	
	No: Claims	1-9
Industrial applicability	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations

see separate sheet

WRITTEN OPINION

Application number
NL2023964

Box No. VII Certain defects in the application

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.0. Reference is made to the following documents:

D1 KR 101 635 492 B1

D2 KR 101 730 020 B1

D3 JP 2015 093031 A

2.0. The present application does not meet the criteria of patentability, because the subject-matter of claim 1 is not new.

2.1. The document D1 (paragraph [0025] - paragraph [0039]; figures 1-5) discloses (the references in parentheses applying to this document):

rugleuning (300) voor een zitconstructie (100) omvattende een frame (see fig. 1) dat een geweven of niet-geweven bekleding (see fig. 1, par. 26) ondersteunt, en een lendensteunelement (500) dat aangrijpt op een achteroppervlak van de geweven of niet-geweven bekleding (see fig. 1, par. 26), met het kenmerk, dat het lendensteunonderdeel (500) op het frame (see fig. 1) is gemonteerd (cf. claim 1).

2.2. Furthermore the documents D2 (paragraph [0028] - paragraph [0053]; figures 1-7) and D3 (paragraph [0024] - paragraph [0121]; figures 1-26) show the characteristics of claim 1.

3.0. Dependent claims 2-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of novelty, see documents D1 (paragraph [0025] - paragraph [0039]; figures 1-5); D2 (paragraph [0028] - paragraph [0053]; figures 1-7); D3 (paragraph [0024] - paragraph [0121]; figures 1-26) and in particular :

a) claims 2,3 D1 (see bendable element 511,512; fig. 1,2), D2 (see par 28 - par 53; figures 1-7);

b) claims 4-8, D1 (The the modification of the position of the knob 540 from the central location to the side of the bendable element 511,512 is merely one of several straight-forward positions of the locations of the knob which the skilled person would select, in accordance with circumstances, without the exercise of inventive skills. Furthermore the features of the knob, the stationary parts, the movable parts and the disc are disclosed in D1, see fig. 2-4), D2 (see par. 38-53, fig. 1-7);

c) claim 9, D1 (the use of backrest removable connected to the seating structure is well known common general knowledge in the field of furniture, therefore cannot contribute to an inventiveness of said claim), D2 (see fig. 1,3).

Re Item VII

Certain defects in the application

1.0. The relevant background art disclosed in D1-D3 is not mentioned in the description, nor is this document identified therein.

.....