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(54) **A HINGE ARRANGEMENT**

(57) The present invention relates to a hinge arrangement (1) comprising at least two hinge members (2, 3) connected with each other in a hinged manner, wherein at least one hinge member (2) comprises a sleeve section (21) provided with two radially internal, substantially longitudinal protrusions (211) or recesses extending substantially in the plane (P) passing through the axis (A1) of said sleeve section (21), a pivot pin (4) embedded in said sleeve section (21) and provided with a threaded adjustment hole (42) substantially perpendicular to the pivot pin (4) axis (A2), two jaw members (41) adjacent to said pivot pin (4) and provided with radially external recesses (412) or protrusions cooperating with said internal protrusions (211) or recesses of said sleeve

section (21), an adjusting screw (43) disposed in said adjustment hole (42) between said jaw members (41), resting on inner walls (212) of said sleeve section (21) and provided with torque application means (431) preferably accessible from the outside of said sleeve section (21), at least one locking screw (44) pressing from the outside said at least one jaw member (41) to the pivot pin (4) after adjusting the hinge arrangement (1) and provided with torque application means (441) accessible from the outside of said sleeve section (21). In order to prevent the hinge arrangement from being disrupted due to its movement, weight, vibrations, improper use, etc., radial abutment means (45) are located between said pivot pin (4) and said at least one jaw member (41).

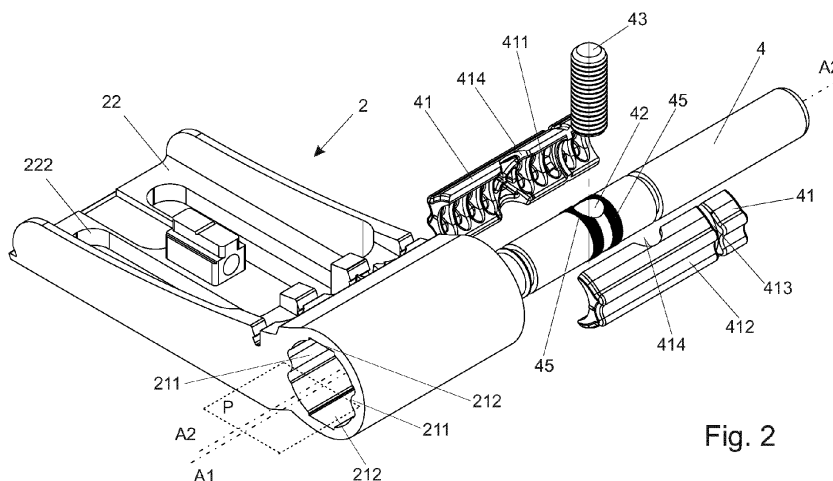


Fig. 2

Description

[0001] The present invention relates to a hinge arrangement comprising at least two hinge members connected with each other in a hinged manner, wherein at least one hinge member comprises a sleeve section provided with two radially internal, substantially longitudinal protrusions or recesses extending substantially in the plane passing through the axis of said sleeve section, a pivot pin embedded in said sleeve section and provided with a threaded through adjustment hole substantially perpendicular to the pivot pin axis, two jaw members adjacent to said pivot pin and provided with radially external recesses or protrusions cooperating with said internal protrusions or recesses of said sleeve section, an adjustment screw disposed in said adjustment hole between said jaw members, resting on inner walls of said sleeve section and provided with torque application means preferably accessible from the outside of said sleeve section, at least one locking screw pressing from the outside said at least one jaw member to the pivot pin after adjusting the hinge arrangement and provided with means for applying torque accessible from the outside of said sleeve section.

Background of the Invention

[0002] A hinge of this kind is disclosed in Polish patent specification PL 214660. It enables the positioning of the pivot pin axis relative to the sleeve section axis.

[0003] Unfortunately, in this type of hinge arrangements, the hinge arrangement is often dysregulated due to its movement, weight, vibrations, improper use, etc.

[0004] An object of the present invention has been to provide a hinge arrangement devoid of this drawback, ensuring in particular easy adjustment of tightening of the sash with respect to the frame after mounting the sash.

Summary of the Invention

[0005] The invention provides a hinge arrangement of the kind mentioned in the outset which is characterized in that radial abutment means are located between said pivot pin and said at least one jaw member.

[0006] Preferably said radial abutment means are located in the vicinity of the locking screw.

[0007] Preferably said radial abutment means are located on the pivot pin and are preferably in the form of knurling.

[0008] Preferably said pivot pin and said at least one jaw member are made of metal, with the hardness of said pivot pin being higher than the hardness of said jaw member.

[0009] In such a case preferably said pivot pin is made of steel, and said at least one jaw member is made of an aluminium alloy.

[0010] Preferably said plane passing through the axis

of said sleeve section is substantially parallel to the plane of the sash.

[0011] Preferably the hinge arrangement comprises two hinge members, wherein said hinge adjusting member is an upper member and is attached to a door or window sash, and said second hinge member is attached to the frame.

Brief description of drawings

[0012] The invention shall be described and explained below in reference to its preferred embodiment and in connection with the attached drawings in which:

Fig. 1 shows an axonometric view of an embodiment of the hinge arrangement;

Fig. 2 shows the upper hinge member with a joint pin, jaw members and an adjusting screw;

Fig. 3 shows the hinge arrangement when folded in a section perpendicular to the pivot axis passing through the axis of the adjusting screw (Fig. 3a) together with the enlarged fragment (Fig. 3b) of the adjusting system shown in Fig. 3a and the enlarged fragment (Fig. 3c) of the locking system shown in Fig. 3b.

Description of preferred embodiments

[0013] An embodiment of a hinge arrangement 1 according to the invention shown in the drawing is used for hinged seating in a frame (not shown in the drawing) a sash of an office door (not shown in the drawing). The hinge arrangement 1 comprises an upper hinge member 2 hingedly connected to the lower hinge member 3. Each of the hinge members 2, 3 has a sleeve section 21, 31. The upper sleeve section 21 is uniformly connected to a securing flap 22 for securing the hinge member 2 to a sash (not shown in the drawing) by means of fixing screws 221 passing through an adjustment plate 223 and through mounting holes 222. After fixing, the securing flap 22 is covered with a cover 224. The lower sleeve section 31 is inserted into the mounting bracket 32 for fixing the hinge member 3 to the frame (not shown) by means of via fixing screws 321.

[0014] The hinge members 2, 3 are connected with each other by means of a pivot pin 4. In the lower part, the pivot pin 4 is hinged in a sleeve (not shown) made of plastic or other material with a low coefficient of friction. The sleeve is located in the sleeve section 31 of the lower hinge member 3.

[0015] Two jaw members 41, provided with cylindrical, radially ribbed internal surfaces 411 adapted to the external curvature of the pivot pin 4 and external, axially longitudinal external recesses 412 with a round cross section, adjoin the upper part of the pivot pin 4. The jaw members 41 also comprise a circumferential groove 413 in which a rubber ring (not shown in the drawing) is mounted to hold the jaw members 41 on the pivot pin 4. The

sleeve section 21 of the upper hinge member 2 is in turn provided with two radially internal, axially longitudinal protrusions 211 with a round cross section, at opposite ends of its diameter and substantially in the plane P passing through the axis A1 of the sleeve section 21 and substantially parallel to the plane of the securing flap 22. The protrusions 211 cooperate with the longitudinal recesses 412 of the jaw members 41.

[0016] To adjust the pressure of the sash against the frame after its attachment, the pivot pin 4 is provided with a threaded through adjustment hole 42 substantially perpendicular to the axis A2 of the pivot pin 4. An adjusting screw 43 is inserted into the adjustment hole 42 between the edge recesses 414 of the jaw members 41. The adjusting screw 43 rests on both sides against inner walls 212 of the sleeve section 21 and is provided with a torque application means 431 for applying torque by a lug key during adjustment from the side of the access hole 213 passing through the wall of the sleeve section 21 and accessible after a slight deflection of the sash. Rotation of the adjusting screw 43 thus causes the pivot pin 4 to move along the axis of the adjusting screw 43. The longitudinal recesses 412 of the jaw members 41 rotate around the inner protrusions 211 of the sleeve section 21, maintaining the parallel axis of the pivot pin 4 relative to the plane defined by the tops of the protrusions 211, pressing or spacing, depending on the needs, the door or window sash relative to the frame. It is obvious to use the illustrated control system to adjust the hinge arrangement 1 relative to any other plane, e.g. perpendicular to the plane of the frame.

[0017] The shape of the corresponding longitudinal protrusions 211 and recesses 412 can be arbitrary, in particular cylindrical or parabolic. It is only important that they allow limited and small rotation of the jaw members 41 within the sleeve section 21. The reverse arrangement consisting in providing at least one jaw member 41 with a protrusion cooperating with a recess made in the inner wall of the sleeve section 21 is also obvious for one skilled in the art.

[0018] After the adjustment of the hinge system 1 is completed, a locking screw 44 is pressed from the outside through the jaw member 41 closer to the securing flap 22, passing through the threaded through locking hole 214 of the sleeve section 21, which after adjustment is covered with a cover 224. The locking screw 44 is provided with a torque application means 441 for a wrench and presses the jaw member 41 against the pivot pin 4 from the outside.

[0019] In order to lock the fixed position of the pivot pin 4, eliminate the looseness between the cooperating elements and prevent deregulation of the hinge arrangement 1 in the future, radial abutment means 45 are located in the vicinity of the locking screw 44, between the pivot pin 4 and the jaw members 41. In this embodiment the radial abutment means 45 have a form of knurling of the pivot pin 4. In this embodiment the jaw members 41 are made of aluminium alloy, and the joint pin 4 is made

of steel. The difference in the hardness of these elements together with the knurling of the pivot pin 4 ensure durability of their connection and prevent dysregulation of the hinge arrangement 1.

[0020] The presented embodiment should not be considered as limiting the spirit of the invention. Some features of the drawing are shown schematically, are not necessarily to scale, and may be exaggerated or minimized, in order to provide better illustration of the invention, the intended scope of protection of which is indicated in the appended claims.

List of reference numerals

[0021]

1. hinge arrangement
2. first hinge member
21. sleeve section
 211. protrusion
 212. inner wall
 213. access hole
 214. locking hole
22. securing flap
 221. fixing screw
 222. mounting hole
 223. adjustment plate
 224. cover
3. second hinge member
 31. sleeve section
 32. mounting bracket
 321. fixing screw
4. pivot pin
 41. jaw member
 411. cylindrical internal surface
 412. axially longitudinal recesses
 413. circumferential groove
 414. edge recess
 42. adjustment hole
 43. adjusting screw
 431. torque application means
 44. locking screw
 441. torque application means
 45. radial abutment means

Claims

1. A hinge arrangement (1) comprising at least two hinge members (2, 3) connected with each other in a hinged manner, wherein at least one hinge member (2) comprises a sleeve section (21) provided with two radially internal, substantially longitudinal protrusions (211) or recesses extending substantially in the plane (P) passing through the axis (A1) of said sleeve section (21), a pivot pin (4) embedded in said sleeve section (21) and provided with a threaded through adjustment hole (42) substantially perpendicular to the pivot pin (4) axis (A2), two jaw members (41) adjacent to said pivot pin (4) and provided with radially external recesses (412) or protrusions cooperating with said internal protrusions (211) or recesses of said sleeve section (21), an adjusting screw (43) disposed in said adjustment hole (42) between said jaw members (41), resting on inner walls (212) of said sleeve section (21) and provided with torque application means (431) preferably accessible from the outside of said sleeve section (21), at least one locking screw (44) pressing from the outside said at least one jaw member (41) to the pivot pin (4) after adjusting the hinge arrangement (1) and provided with torque application means (441) accessible from the outside of said sleeve section (21), **characterized in that** radial abutment means (45) are located between said pivot pin (4) and said at least one jaw member (41). 5 10 15 20 25 30
2. The hinge arrangement according to Claim 1, **characterized in that** said radial abutment means (45) are located in the surroundings of the locking screw (44). 35
3. The hinge arrangement according to Claim 1 or 2 **characterized in that** said radial abutment means (45) are located on the pivot pin (4) and are preferably in the form of knurling. 40
4. The hinge arrangement according to Claim 3, **characterized in that** said pivot pin (4) and said at least one jaw member (41) are made of metal, with the hardness of said pivot pin (4) being higher than the hardness of said jaw member (41). 45
5. The hinge arrangement according to Claim 4, **characterized in that** the said pivot pin (4) is made of steel, and said at least one jaw member (41) is made of an aluminium alloy. 50
6. The hinge arrangement according to any one of the preceding Claims, **characterized in that** said plane (P) passing through the axis (A1) of said sleeve section (21) is substantially parallel to the plane of the sash. 55
7. The hinge arrangement according to any one of the preceding Claims, **characterized in that** it comprises two hinge members (2, 3), wherein said hinge adjusting member (2) is an upper member and is attached to a door or window sash (5), and said second hinge member (3) is attached to the frame.

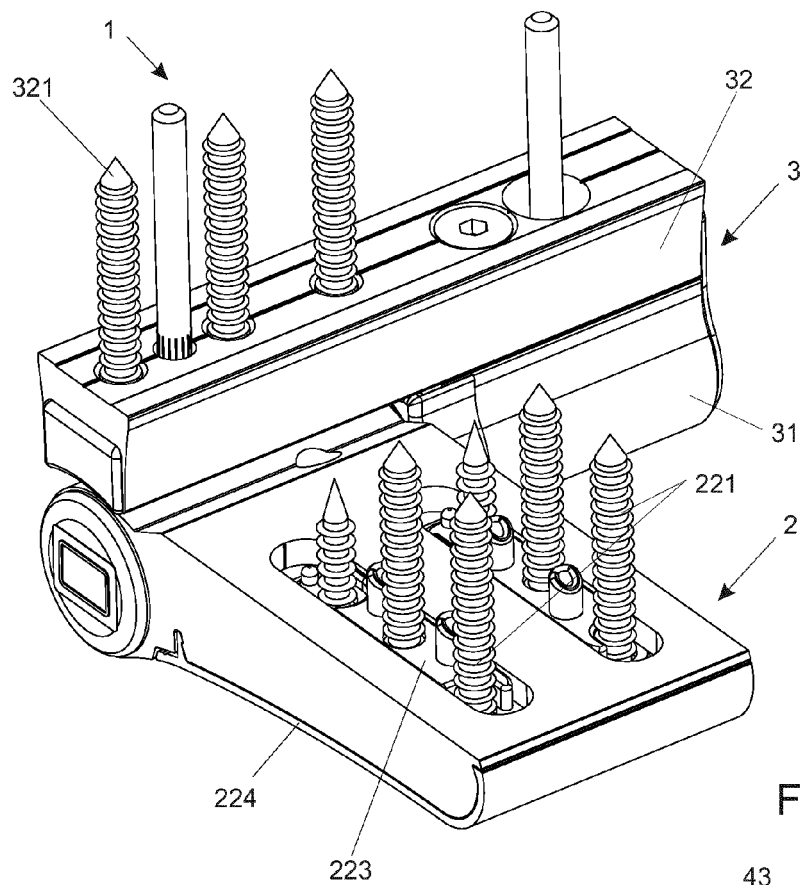


Fig. 1

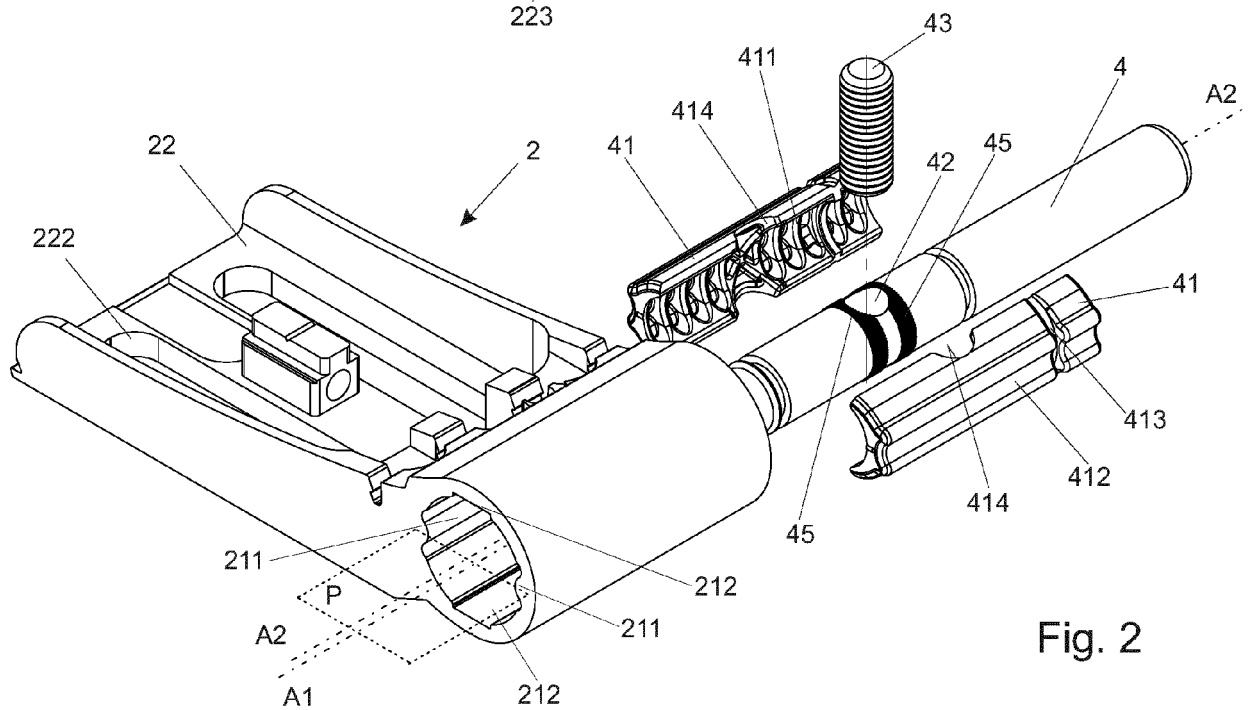
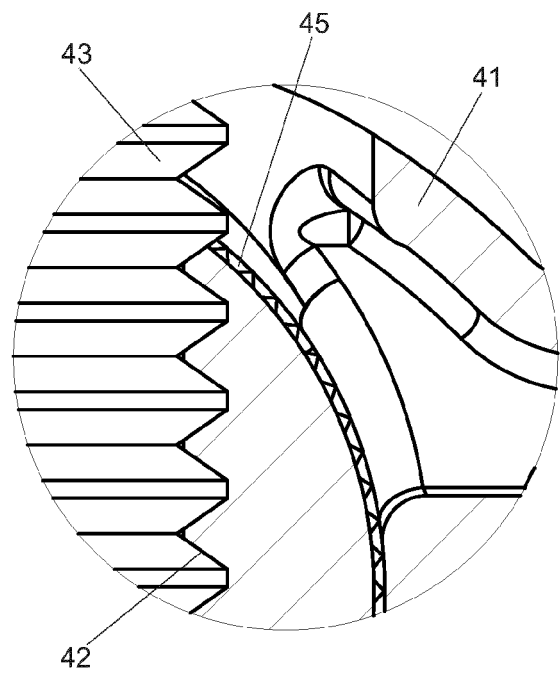
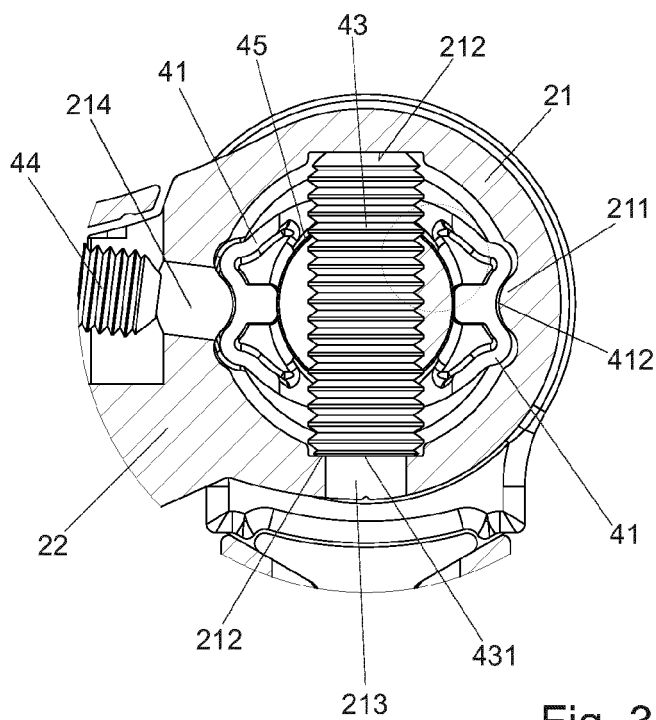
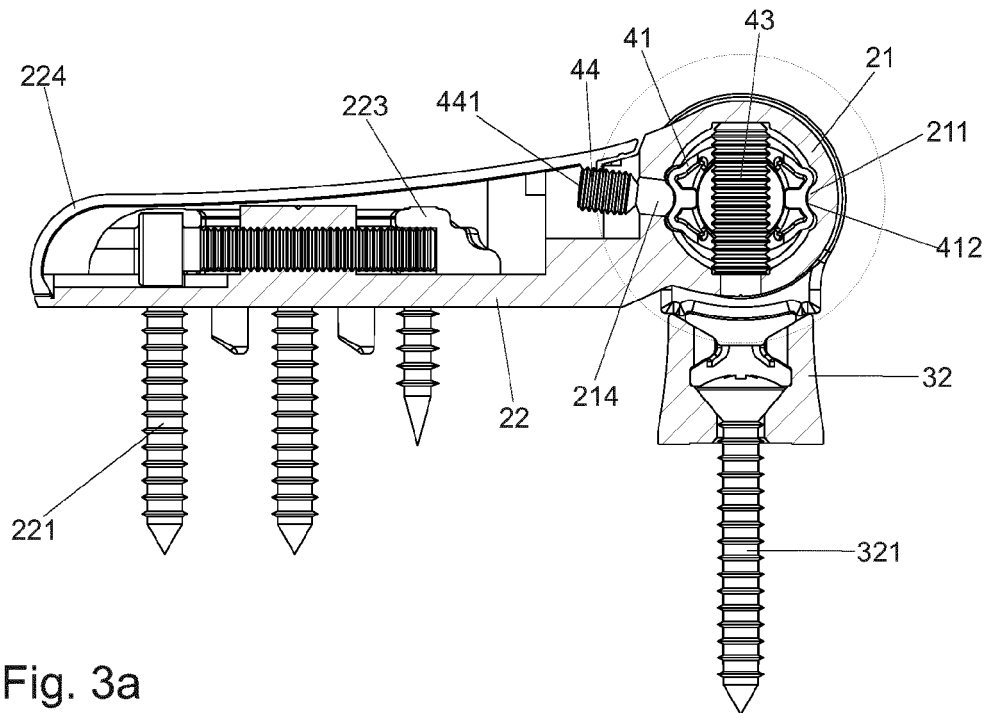


Fig. 2





EUROPEAN SEARCH REPORT

Application Number
EP 19 21 6991

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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,D	PL 214 660 B1 (WALA SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA [PL]) 30 August 2013 (2013-08-30)	1-7	INV. E05D5/14 E05D7/00
Y	* paragraph [0012] - paragraph [0022]; figures 1-16 *	1-7	ADD. E05D7/04
Y	----- WO 98/41720 A1 (SAVIO SPA [IT]) 24 September 1998 (1998-09-24) * pages 8-20; figures 1-9 *	1-7	
A	----- PL 195 361 B1 (KUCHARSKA JANINA [PL]; KUCHARSKI JACEK [PL]; KUCHARSKI MACIEJ [PL]) 28 September 2007 (2007-09-28) * paragraph [0014]; figures 1-9 *	1-7	
A	----- US 2013/104340 A1 (HASLER JOSEF [CH]) 2 May 2013 (2013-05-02) * paragraphs [0077], [0080]; figures 1-9 *	1,3	
A	----- DE 102 59 678 A1 (ECO SCHULTE GMBH & CO KG [DE]) 1 July 2004 (2004-07-01) * paragraphs [0011], [0020], [0024]; figures 1-4 *	1,3	TECHNICAL FIELDS SEARCHED (IPC) E05D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 April 2020	Examiner Boufidou, Maria
CATEGORY OF CITED DOCUMENTS 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 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			

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

EP 19 21 6991

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
PL 214660	B1	30-08-2013	NONE
WO 9841720	A1	24-09-1998	EP 1009899 A1 21-06-2000 IL 131960 A 12-03-2003 IT T0970055 U1 18-09-1998 PL 335677 A1 08-05-2000 TR 199902277 T2 21-12-1999 WO 9841720 A1 24-09-1998 YU 44699 A 10-07-2001
PL 195361	B1	28-09-2007	NONE
US 2013104340	A1	02-05-2013	EP 2586944 A1 01-05-2013 ES 2574929 T3 23-06-2016 HK 1179318 A1 17-02-2017 US 2013104340 A1 02-05-2013
DE 10259678	A1	01-07-2004	NONE

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- PL 214660 [0002]