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(54) **BACKREST, PARTICULARLY FOR AN OFFICE CHAIR**

(57) A backrest 10 of a chair, particularly an office chair, that has a substantially hollow shape, in which one or both of a front wall 11, for contact with the back of a user, and a rear wall 12 is sound-absorbing.

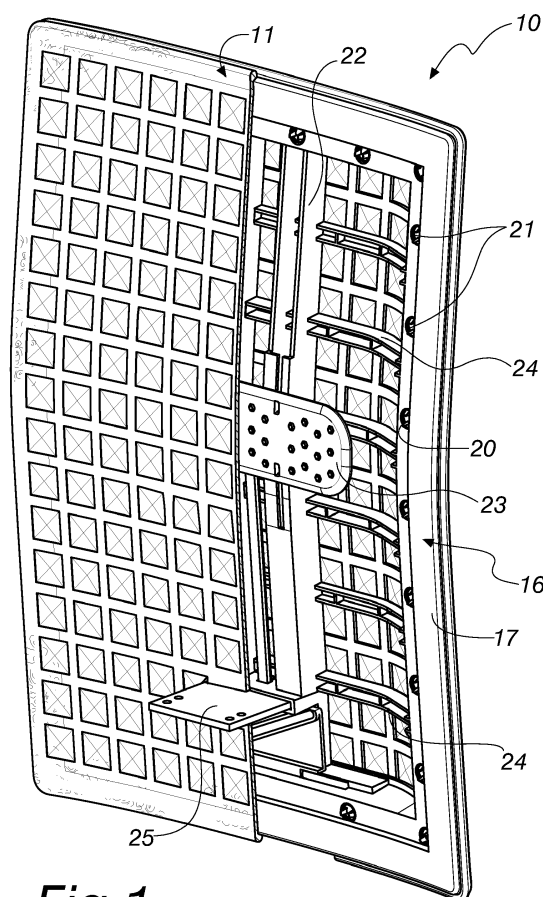


Fig. 1

Description

[0001] The present invention relates to a backrest, particularly for an office chair.

[0002] The need has always been felt to reduce noise in environments, both private and public, such as offices, hotels, restaurants, hospitals and schools. This is particularly true in offices, in rooms occupied by more than one employee and in meeting rooms.

[0003] To this end, the use is widespread of sound-absorbing elements, such as pictures and panels, to be hung and installed on walls, but this solution is often obstructed by the laboriousness of the affixing and installation operations.

[0004] Furthermore, very often these elements do not ensure a sufficient reduction of the noise level, in particular in offices and especially in open-space offices.

[0005] The aim of the present invention is to provide a backrest, particularly for an office chair, that contributes to reducing the noise level in the surrounding environment.

[0006] Within this aim, an object of the invention is to provide a backrest that is structurally simple.

[0007] This aim and this and other objects which will become better evident hereinafter are achieved by a backrest of a chair, particularly an office chair, characterized in that it has a substantially hollow shape, in which one or both of a front wall, for contact with the back of a user, and a rear wall is sound-absorbing.

[0008] Further characteristics and advantages of the invention will become better apparent from the detailed description that follows of a preferred, but not exclusive, embodiment of the backrest according to the invention, which is illustrated for the purposes of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective view of a backrest according to the invention, partially cutaway to show the inside; Figure 2 is a perspective view of a wall of the backrest according to the invention; Figure 3 is a sectional perspective view of a portion of sound-absorbing wall of the backrest.

[0009] With reference to the figures, the backrest according to the invention is generally designated with the reference numeral 10.

[0010] The backrest is conceived, particularly but not exclusively, for an office chair.

[0011] It has a substantially hollow shape, with a front wall 11, for contact with the back of a user, and a rear wall 12.

[0012] The hollow shape can be seen in Figure 1, while Figure 2 shows the rear wall 12.

[0013] One or both of the two walls, i.e. the rear wall 11 and the front wall 12, is a sound-absorbing wall and is also flexible and in sheet form.

[0014] In particular, this has studs 13 on its surface, which can be seen in the accompanying figures and is

better illustrated in the portion of rear wall 12 shown in Figure 3.

[0015] Also in that figure, note that the sound-absorbing wall, here the rear wall 12, comprises a sound-absorbing layer 14 and an outer covering layer of fabric 15, which are thermoformed together so as to obtain the studs 13 on the surface.

[0016] The sound-absorbing layer 14 is preferably constituted by felt, or by a thermoformable non-woven fabric, and the thermoforming results in its adhesion to the fabric layer 15.

[0017] In the example shown, both of the walls are sound-absorbing and both are constituted by the two thermoformed layers. Also in this example, and without placing limits on the invention, the protrusions of the studs 13 of the front wall 11 are directed inward, therefore toward the cavity, while those of the rear wall 12 are directed outward.

[0018] As can be seen in the first two figures, the backrest 10 comprises a frame 16 with a front perimetric element 17 (shown in the view in Figure 1), for the front wall 11, and a rear perimetric element 18 (shown in Figure 2), for the rear wall 12, to be coupled together thus ensuring the backrest 10 is closed.

[0019] The material of the front wall 11 and the material of the rear wall 12 are folded back and fixed respectively on the rear of the front perimetric element 17 and on the rear of the rear perimetric element 18, both materials being constituted by the two layers described.

[0020] The frame 16 is made of plastic material, for example Acrylonitrile Butadiene Styrene (known as ABS for short) can be used. Figure 2 shows how the material of the rear wall 12 is turned round behind the rear perimetric element 18 and is fixed to it by way of metallic staples 19. The metallic staples 19 pass through the perimetric element, as it is made of plastic material.

[0021] In the same way, the material of the front wall 11 is fixed to the front perimetric element.

[0022] In order to ensure a rapid coupling between the two walls, along the rear perimetric element 18 there are hooks 20 which protrude from that perimetric element, and are elastically deformable in order to be inserted into corresponding holes 21 provided along the front perimetric element 17 of the frame 16.

[0023] In Figure 1 the inside of the backrest is visible. It can be seen that the part of the frame 16 corresponding to the front wall 11 comprises the front perimetric element 17 and also a portion inside the same perimetric element, with longitudinal guides 22 for sliding the lumbar support 23 and transverse reinforcements 24.

[0024] To join the backrest 10 to the seat of the chair, there is a plate 25 to be fixed to a movement mechanism in the seat.

[0025] Operation of the backrest, according to the invention, is the following.

[0026] During use of a chair provided with a backrest 10, the sound waves that strike the sound-absorbing walls are absorbed and trapped in the cavity, impeding

some of them from bouncing on the surface and being reflected into the surrounding environment.

[0027] The hollow structure makes it possible to absorb both some of the sound waves that strike either the front wall 11 or the rear wall 12, and also some of the sound waves that, having passed through the first wall, also reach the second, thus substantially creating a double barrier.

[0028] In this manner some of the sound waves emitted in a room or in an open-space office do not bounce continuously between the walls and other obstacles.

[0029] The presence of the studs 13, which are obtained by way of thermoforming, increases the incidence surface of the sound waves, with respect to a substantially smooth surface, thus increasing the sound-absorbing efficacy.

[0030] In practice it has been found that the invention fully achieves the set aim and object by providing a backrest that is structurally simple and capable of reducing the noise level in environments in which chairs fitted with such backrest are used.

[0031] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0032] In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any according to requirements and to the state of the art.

[0033] The disclosures in Italian Patent Application No. 102016000104808 (UA2016A007459) from which this application claims priority are incorporated herein by reference.

[0034] 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 backrest (10) of a chair, particularly an office chair, **characterized in that** it has a substantially hollow shape, in which one or both of a front wall (11), for contact with the back of a user, and a rear wall (12) is sound-absorbing.
2. The backrest according to claim 1, **characterized in that** said sound-absorbing wall comprises a sound-absorbing layer (14).
3. The backrest according to claim 1, **characterized in that** said sound-absorbing wall has studs (13) on its surface.

4. The backrest according to one or more of the preceding claims, **characterized in that** said sound-absorbing wall comprises said sound-absorbing layer (14) and an external layer of fabric (15), which are thermoformed together so as to obtain studs (13) on the surface.

5. The backrest according to one or more of the preceding claims, **characterized in that** said sound-absorbing layer (14) is constituted by felt.

6. The backrest according to claim 5, **characterized in that** the felt of said sound-absorbing layer (14) is a thermoformable non-woven fabric.

7. The backrest according to one or more of the preceding claims, **characterized in that** it comprises a frame (16) with a front perimetric element (17), for said front wall (11), and a rear perimetric element (18), for said rear wall (12), to be coupled together.

8. The backrest according to claim 7, **characterized in that** the material of said front wall (11) and the material of said rear wall (12) are folded back and fixed respectively on the rear of said front perimetric element (17) and on the rear of said rear perimetric element (18).

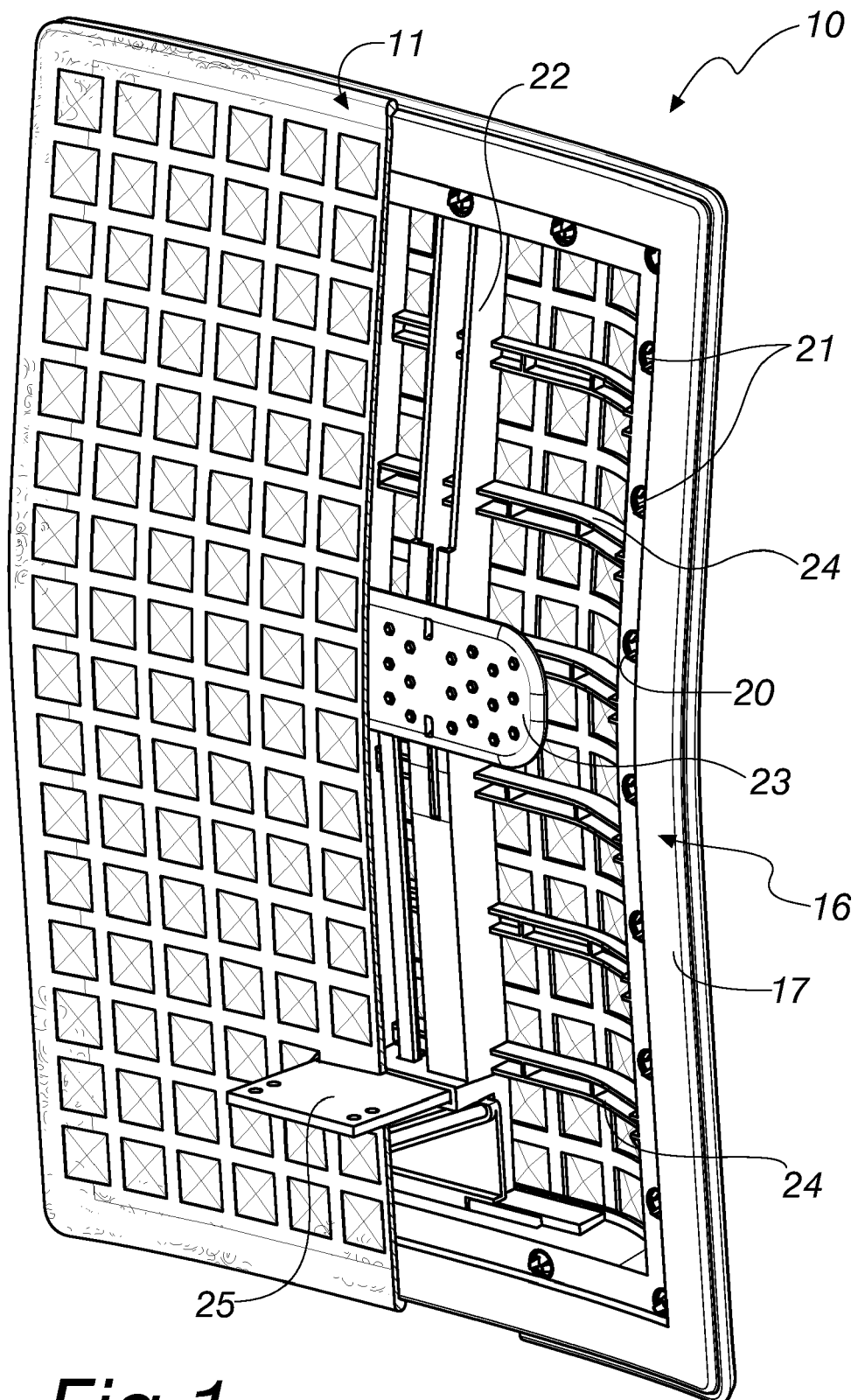


Fig. 1

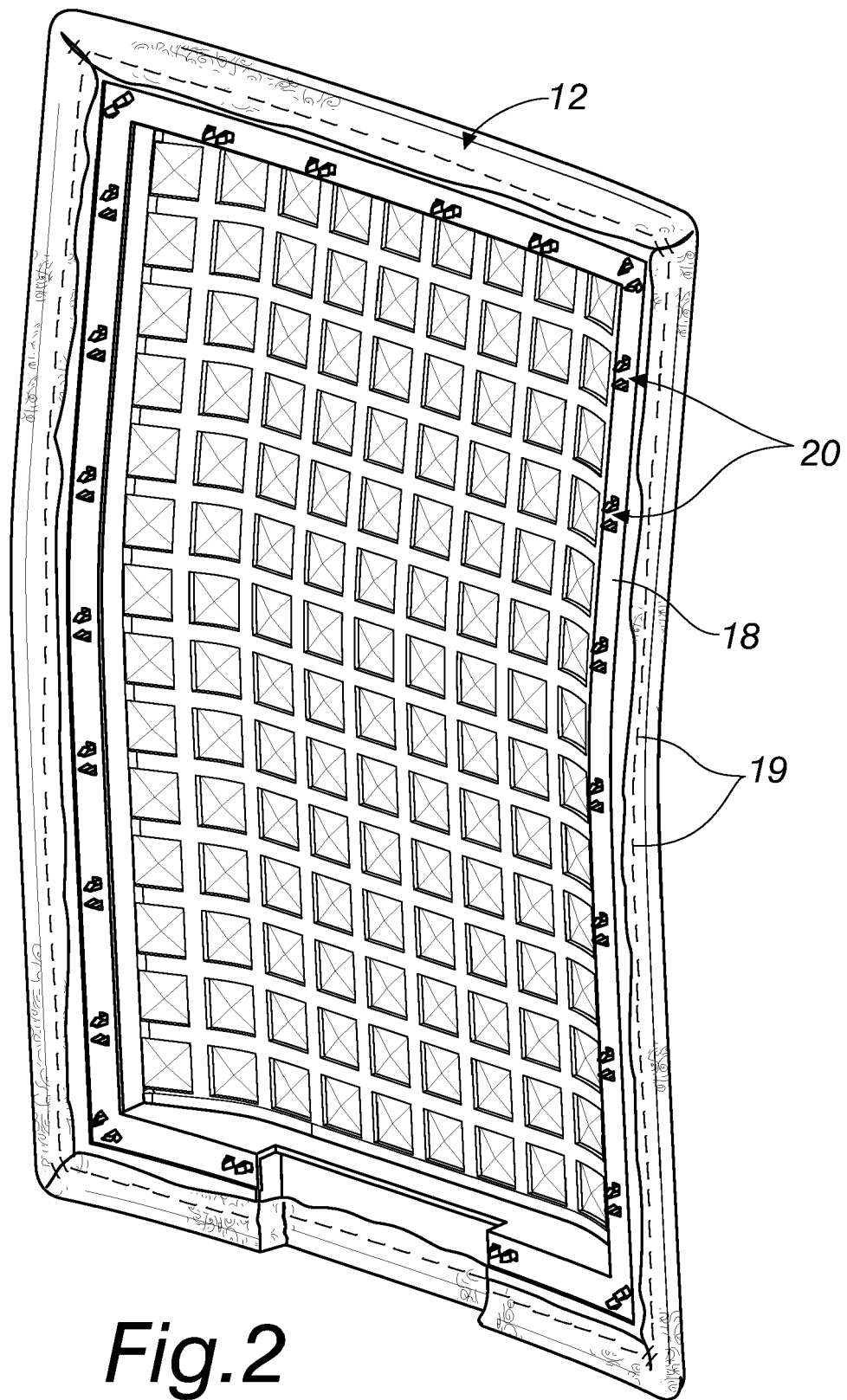


Fig. 2

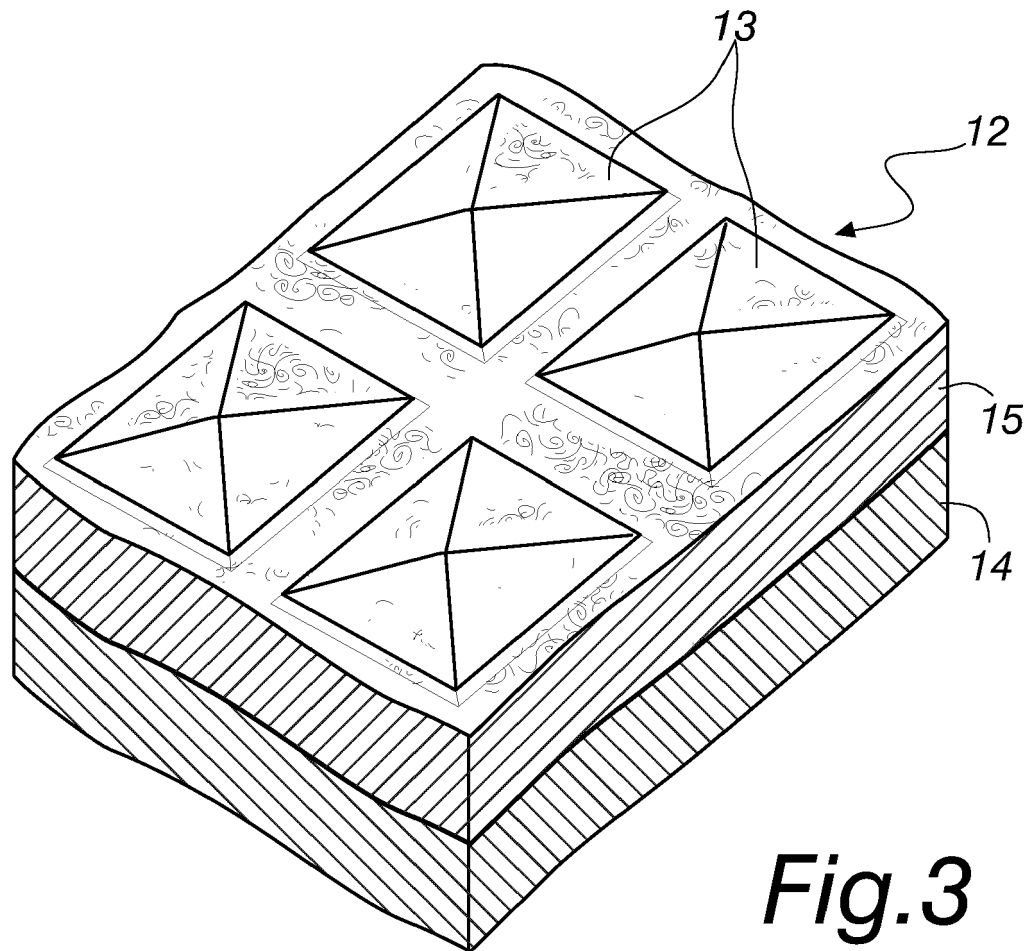


Fig.3



EUROPEAN SEARCH REPORT

 Application Number
 EP 17 19 6676

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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	JP 2008 259732 A (TOYOTA BOSHOKU CORP) 30 October 2008 (2008-10-30)	1-7	INV.
A	* paragraphs [0010], [0016]; figure 5 * -----	8	A47C7/40 A47C31/02 G10K11/16
X	JP H08 275841 A (KOTOBUKI & CO LTD) 22 October 1996 (1996-10-22)	1-7	E04B1/84 A47C5/00
A	* paragraphs [0005], [0009]; figures 2-4 * -----	8	A47C7/46 A47C31/00
A	JP 2007 176363 A (NISHIKAWA RUBBER CO LTD) 12 July 2007 (2007-07-12)	1-6	
	* paragraphs [0005], [0035]; claims 1-3; figures 4-5 *		
A	US 2014/008144 A1 (SAVIAN SCOTT [US] ET AL) 9 January 2014 (2014-01-09)	1-6	
	* paragraph [0007]; figures 1-4 *		
A	EP 2 927 391 A1 (GABER S R L [IT]) 7 October 2015 (2015-10-07)	1-3	
	* figure 4 *		
A	GB 2 464 318 A (SCREENS AT WORK LTD [GB]) 14 April 2010 (2010-04-14)	1,2,5-8	
	* figures 1,2,5 *		

The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		5 February 2018	Pössinger, Tobias
CATEGORY OF CITED DOCUMENTS		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	
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			

EPO FORM 1503 03.82 (P04C01)

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

EP 17 19 6676

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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
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2008259732 A	30-10-2008	JP 5151224 B2 JP 2008259732 A	27-02-2013 30-10-2008
JP H08275841 A	22-10-1996	NONE	
JP 2007176363 A	12-07-2007	JP 4704910 B2 JP 2007176363 A	22-06-2011 12-07-2007
US 2014008144 A1	09-01-2014	CA 2878487 A1 CN 104507797 A EP 2870066 A2 EP 3112257 A1 JP 5986313 B2 JP 6077697 B2 JP 2015528128 A JP 2016139148 A US 2014008144 A1 US 2015144734 A1 WO 2014008507 A2	09-01-2014 08-04-2015 13-05-2015 04-01-2017 06-09-2016 08-02-2017 24-09-2015 04-08-2016 09-01-2014 28-05-2015 09-01-2014
EP 2927391 A1	07-10-2015	NONE	
GB 2464318 A	14-04-2010	NONE	

EPO FORM P0459

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

- IT 102016000104808 [0033]
- IT UA2016007459 A [0033]