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(54) **MODIFICATION DEVICE OF A SURFACE**

(57) The present application relates to a modification device of a surface.

The main advantage of this technology lies in the ease of changing the type of surface used, thereby allowing to change the surface's friction conditions. With the device now developed, it is possible to exchange surfaces by means of a retractable system.

From a practical point of view, the device now dis-

closed allows, for example, the use of the same footwear for use in various kinds of flooring or the use of the same footwear with different decorative applications. The device increases user comfort by eliminating the need to transport or store a large number of different footwear. This same solution can also be used in backpacks, suitcases, bags, wallets, files and/or sandpaper, bases for hot/cold surfaces, among others.

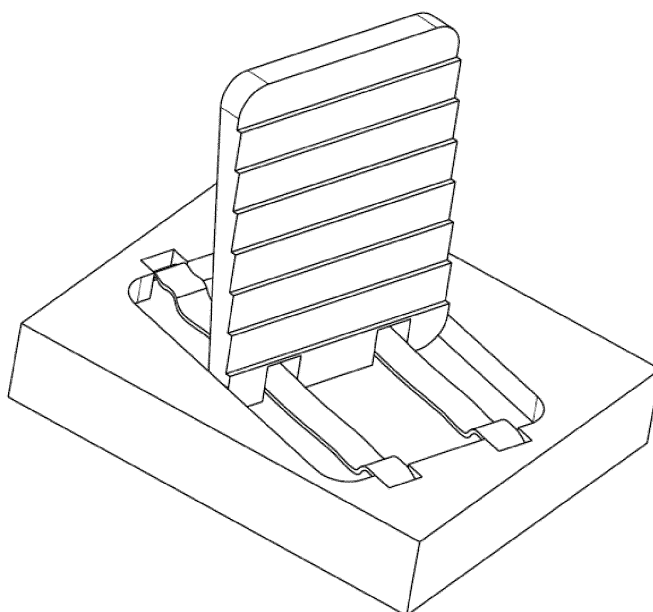


Figure 2

Description

Technical domain

[0001] The present application relates to a modification device of a surface.

Background

[0002] It is of the prior art knowledge solutions which allow the modification of a surface and its friction conditions, for example when applied in footwear soles, which however, bear no resemblance to the device now disclosed.

[0003] EP 1558103 discloses a sole for anti-slipping shoes that comprises anti-slipping means to increase adherence, which are fixed to rigid or semi-rigid support members. These rigid or semi-rigid support members that include anti-slipping means have the possibility to rotate 180° in relation to a fixed point, which is fixed to the sole. When the footwear is being used, each one of these support members is fitted into recesses created in the sole so that once engaged, the lower surface of the member is aligned flush with the footwear sole. In this document, there is no reference to the use of any conducting wire serving as a guide for the rotation of the double-sided piece.

[0004] US6675504 discloses a shoe sole which contains a number of rigid screws or spikes on its contact face with the surface through where the user moves, wherein said screws or spikes can move from a position in contact with said surface to a stowed position where it does not interfere with that surface. This way, the document discloses the placement of retractable spikes or screws in order to change the coefficient of friction between the footwear sole and the surface through where the user moves. In this document no reference is made to the use of any conducting wire that serves as a guide for the rotation of the sole.

Summary

[0005] The present application describes a modification device of a surface that comprises at least one recess, at least one double-sided piece with at least one orifice through where the guide wire moves, at least one guide wire and at least one attachment point.

[0006] In one embodiment, the guide wire of the device is applied in any direction provided that such direction defines a symmetry axis of the recess's shape.

[0007] In another embodiment, the attachment point of the device is a protrusion disposed within the recess.

[0008] The present application also describes the use of the modification device of a surface in footwear, backpacks, suitcases, bags, wallets, files and/or sandpaper, bases for hot/cold surfaces

General description

[0009] The present application relates to a modification device of a surface.

[0010] The main advantage of this technology lies in the ease in changing the type of surface used. Usually, in order to change the friction conditions of a surface, it is necessary to replace the entire surface, which may in some situations involve high financial investment. In other situations, as for example the modification of a surface of a footwear sole, one must also take into consideration the advantage of not being necessary to use different shoe thus making it possible to exchange parts of the sole by means of a retractable system which results in a greater comfort for the user.

[0011] The modification device of a surface comprises a recess in the surface, a double-sided piece with an identical shape to the one of the recess and having at least one orifice through where the guide wire(s) moves, at least one guide wire that can be applied in any direction provided that such direction defines a symmetry axis of the recess's shape and at least one attachment point, which may be achieved for example by the existence of protrusion(s) placed within the recess.

[0012] From a practical point of view, the device now disclosed allows, for example, the use of the same footwear for use in various kinds of flooring or the use of the same footwear with different decorative applications. The device increases user comfort by eliminating the need to transport or store a large number of different footwear. This same solution can also be used in backpacks, suitcases, bags, wallets, files and/or sandpaper, bases for hot/cold surfaces, among others.

Brief description of the figures

[0013] For an easier understanding of the art attached figures are joined, which represent preferred embodiments of the invention that, however, are not intended to limit the scope of this invention.

Figure 1 illustrates the modification device of a surface where the double-sided piece is properly placed in the recess.

Figure 2 illustrates the modification device of the surface with the double-sided piece in modification position of the face.

Figure 3 illustrates the modification device of the surface where the double-sided piece has travelled all the way of the guide wire and it was fitted in the recess allowing the use of a face where the friction conditions are different.

Figure 4 illustrates the modification device of a surface applied to an embodiment of footwear sole where the double-sided piece is properly placed in

the recess.

Figure 5 illustrates the modification device of the surface applied to a footwear sole embodiment with the double-sided piece in modification position of the face.

Figure 6 illustrates the modification device of the surface applied to an embodiment of footwear sole where the double-sided piece has travelled all the way of the guide wire and it was fitted in the recess allowing the use of a face where friction conditions are different.

Description of the embodiments

[0014] Referring to the figures, some embodiments will now be described in more detail, which however are not intended to limit the scope of the present application.

[0015] In one embodiment, the modification device of a surface comprises a recess in the surface, a double-sided piece with an identical shape to the recess and having at least one orifice through where the guide wire(s) moves, at least one guide wire and at least one attachment point, which may be achieved for example by the existence of protrusion(s) placed within the recess.

[0016] In another embodiment, the guide wire may be applied in any direction provided that such direction defines a symmetry axis of the recess's shape, i.e. in practice, the guide wire should be positioned towards the symmetry axis of the recess's shape regardless the direction and without any preference if the recess presents more than one symmetry axis.

[0017] In Figure 1 it is illustrated the modification device of a surface properly placed in the recess. The double-sided piece must have a dimensional tolerance of between 0.5 and 1 mm in order to allow the perfect fitting between said double-sided piece and the recess.

[0018] As illustrated in Figure 1, the double-sided piece must present a hole through where the guide wire will pass, thus allowing the double-sided piece, after being removed from the recess, to move along the guide wire.

[0019] In practice, when the user wants to make a modification of the surface he removes the double-sided piece of the recess performing a lifting of the piece until it is at an angle such as to allow total movement of the piece throughout the guide wire and subsequently making total folding down of the double-sided piece fitting it in the recess. Figure 2 precisely illustrates the modification device of the surface with the double-sided piece in position of face modification, while Figure 3 illustrates the modification device of the footwear sole in which the double-sided piece went all the guide wire path, now allowing visualization of the opposite face.

[0020] The material of the guide wire should be compatible with the material of the sole so that there is no chemical reaction in the device assembly step. The guide wire may be introduced in the device's manufacturing

phase.

[0021] The present embodiment is naturally not in any way restricted to the embodiments described herein and a person of ordinary skill in the art can provide many modification possibilities thereof without departing from the general idea, as defined in the claims.

[0022] All the embodiments described above are of course combinable with one another. The following claims further define preferred embodiments.

Claims

1. Modification device of a surface comprising at least one recess, at least one double-sided piece with at least one orifice through where the guide wire moves, at least one guide wire and at least one attachment point.
2. Device according to the preceding claim, wherein the guide wire of the device is applied in any direction provided that such direction defines a symmetry axis of the recess's shape.
3. Device according to any one of the preceding claims, wherein the attachment point is a protrusion positioned within the recess.
4. Use of the modification device of a surface in footwear, backpacks, suitcases, bags, wallets, files and/or sandpaper, bases for hot/cold surfaces.

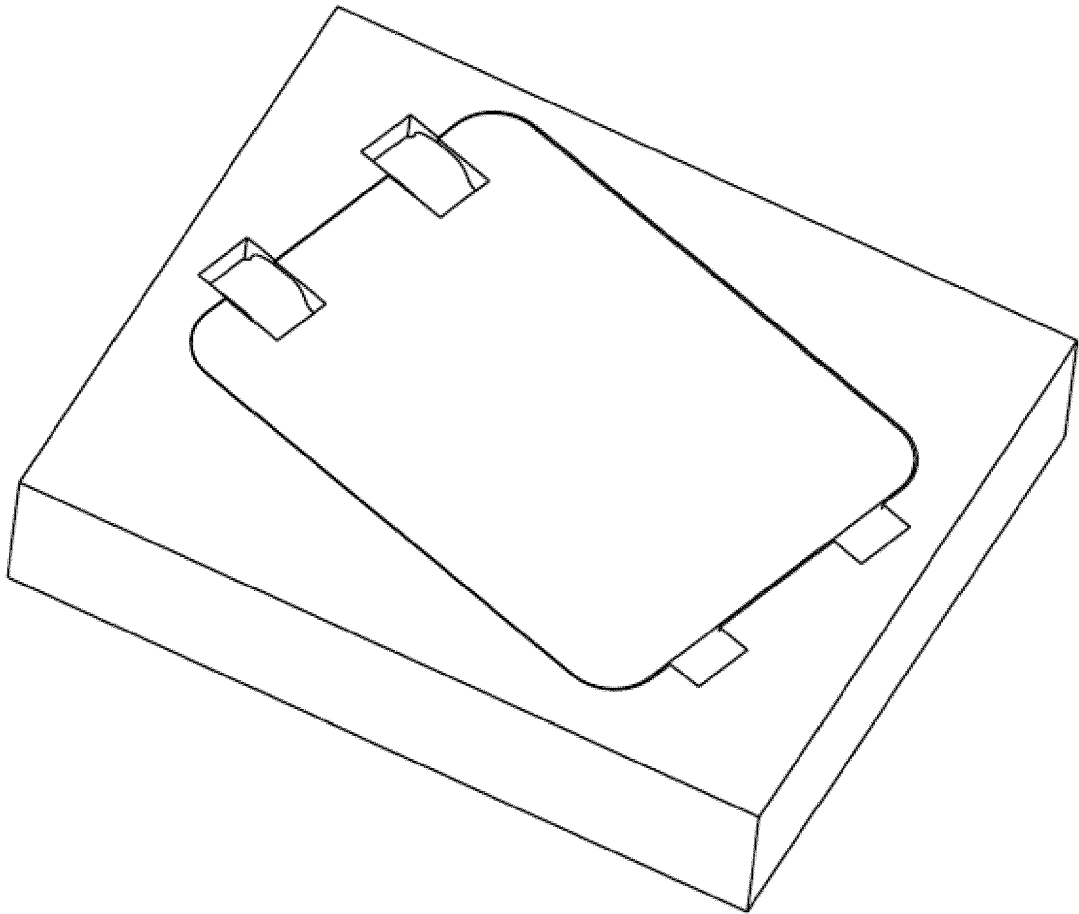


Figure 1

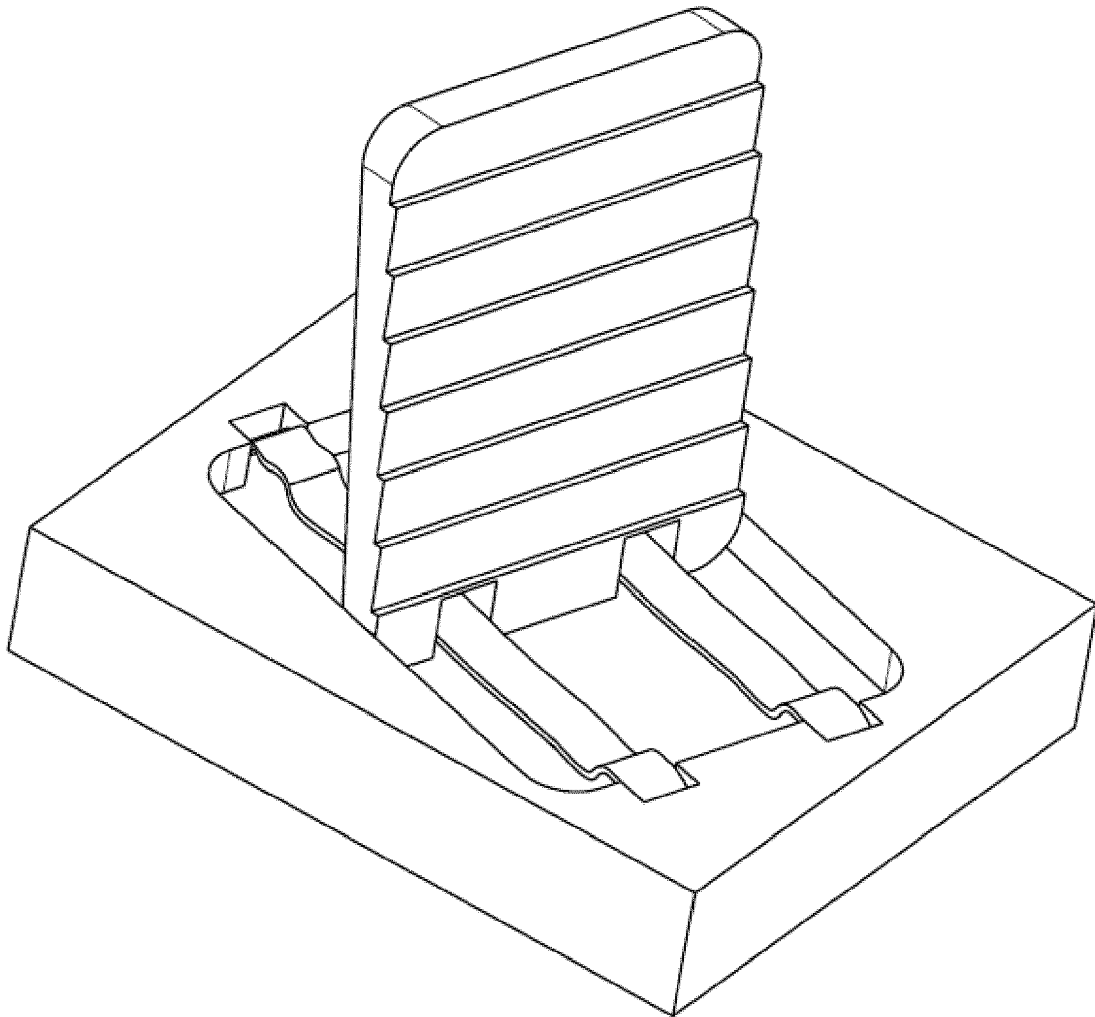


Figure 2

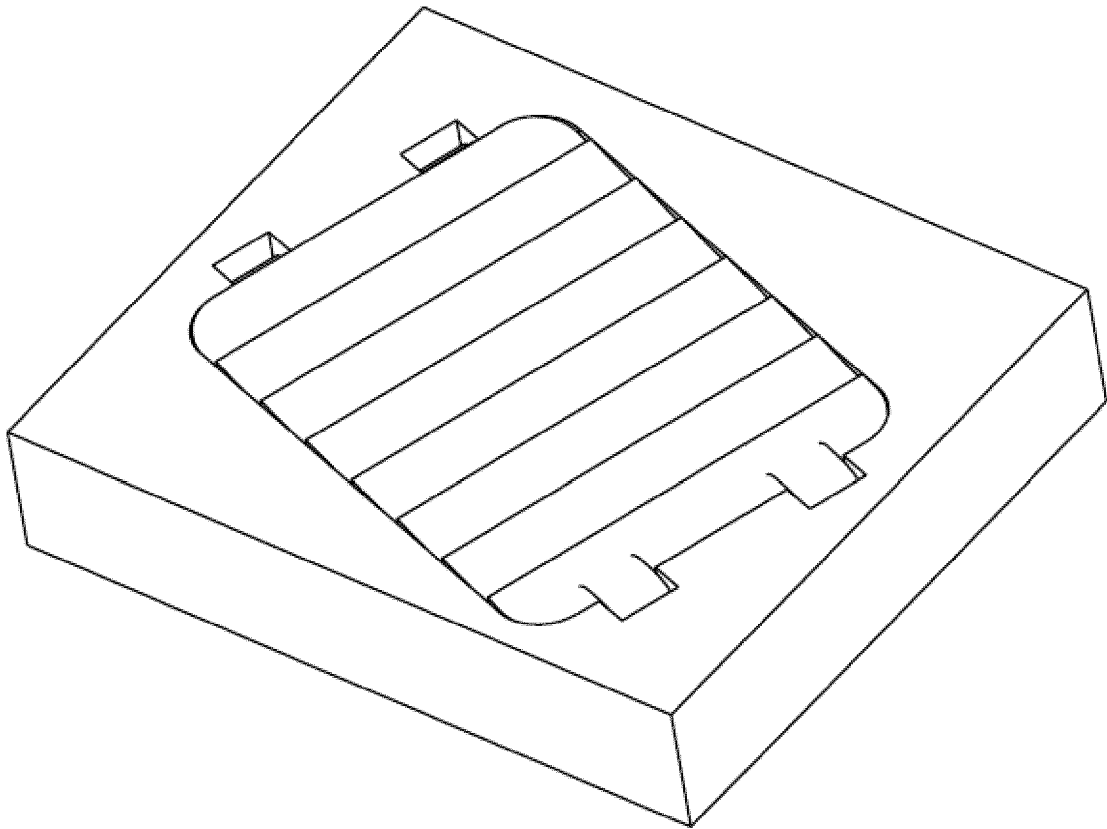


Figure 3

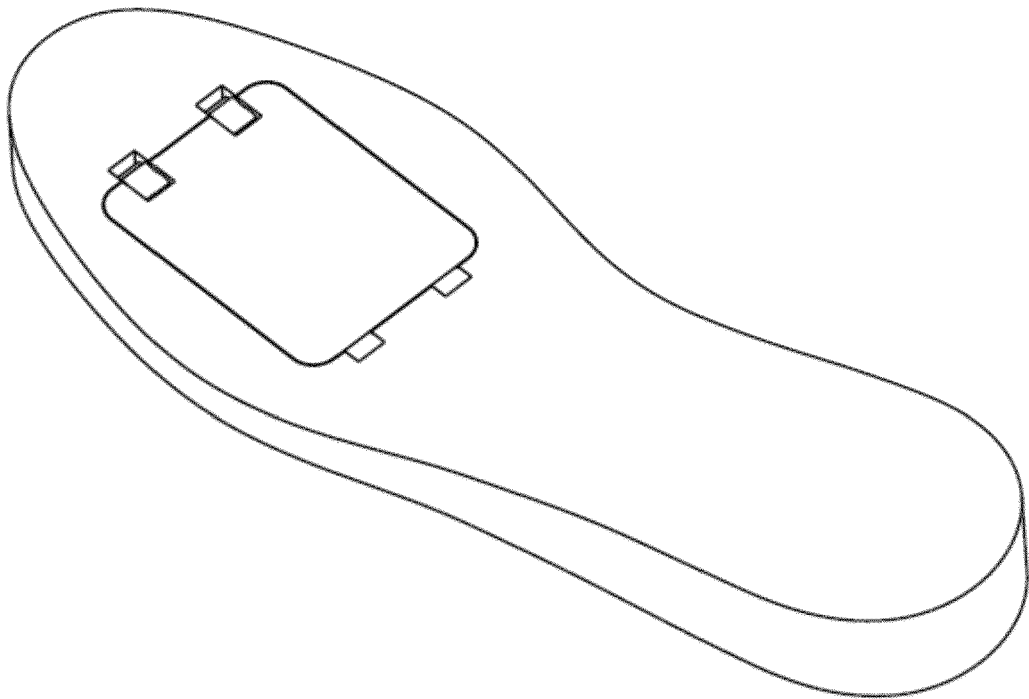


Figure 4

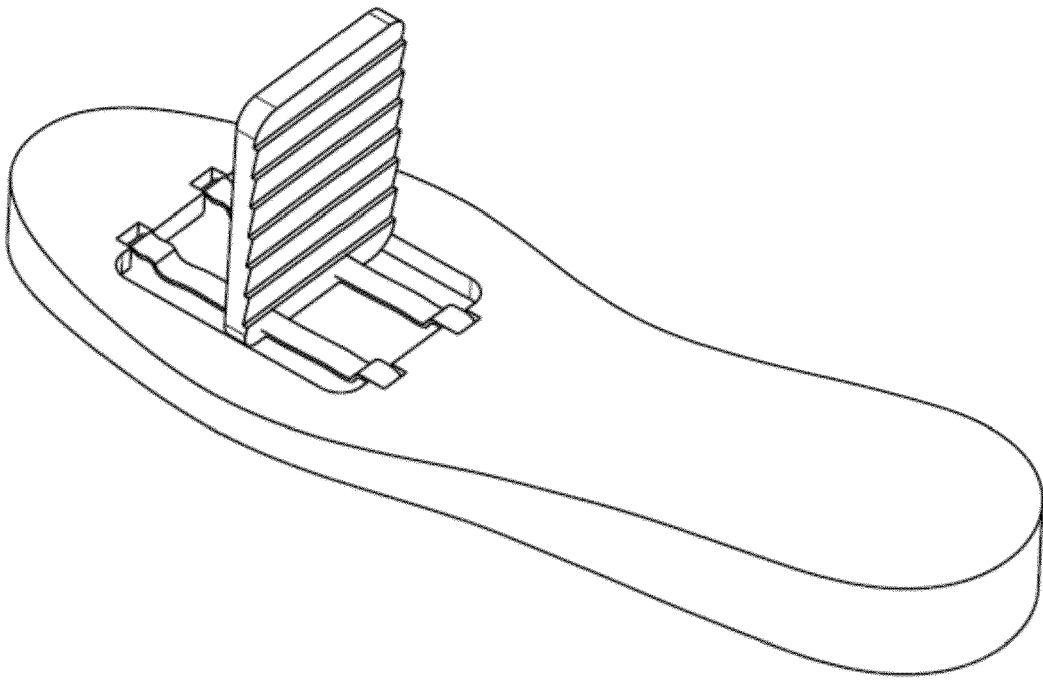


Figure 5

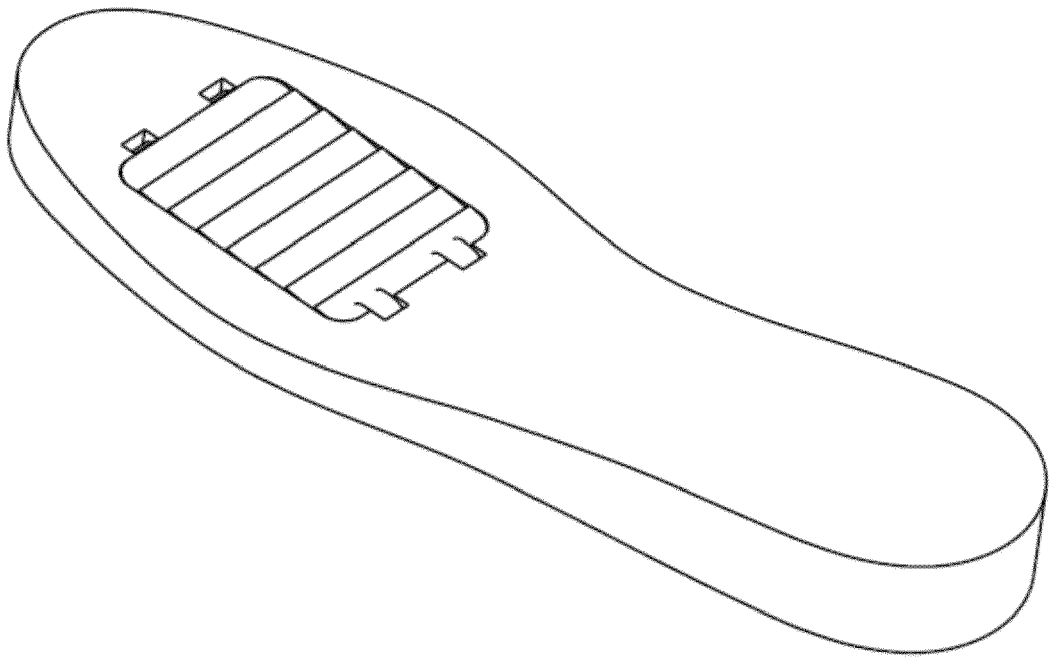


Figure 6



EUROPEAN SEARCH REPORT

Application Number
EP 15 20 2788

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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	US 2 065 386 A (KRISTIAN MATSSON JOHN) 22 December 1936 (1936-12-22) * page 1, right-hand column, lines 13-48 * * figures 3,4 *	1-4	INV. A43B13/22 A43C15/08
X	US 2010/175355 A1 (DESMARAIS KERRY T [US] ET AL) 15 July 2010 (2010-07-15) * the whole document *	1,2	
			TECHNICAL FIELDS SEARCHED (IPC)
			A43B A43C B68C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 May 2016	Examiner Espeel, Els
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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EPO FORM 1503 03.02 (P04C01)

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

EP 15 20 2788

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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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13-05-2016

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US 2065386	A	22-12-1936	NONE

US 2010175355	A1	15-07-2010	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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- EP 1558103 A [0003]
- US 6675504 B [0004]