The invention relates to a panel comprising a first sheet of glass 2, a first electrically conductive coating 7, and a second electrically conductive coating 8, wherein the first electrically conductive coating 7 and the second electrically conductive coating 8 are provided on the first side of the first sheet of glass 2, the first electrically conductive coating 7 and the second electrically conductive coating 8 are electrically insulated from each other, the first electrically conductive coating 7 and the second electrically conductive coating 8 are adapted for generating an electric field 9 on the first side of the first sheet of glass 2 and/or on the second side of the first sheet of glass 2, and the first electrically conductive coating 7 and the second electrically conductive coating 8 are adapted for detecting a variation of the electric field 9 on the first side of the first sheet of glass 2 and/or on the second side of the first sheet of glass 2. The invention allows for a simple and precise detection of a preferably nearby liquid, gas or solid.
FLUID DETECTION PANEL

The invention relates to a panel comprising a first sheet of glass, and especially to a panel for detecting a liquid, gas or solid.

Technical Background

It is known from the prior art that a liquid, a gas or a solid can be detected on a panel by using an optical emitter generating a light beam and a receiver detecting the presence of the beam, e.g. through a direct light path or after a reflection from a surface. When, for example, a water drop stirs into the light path, the beam is deflected, which can be detected by the receiver. However, these optical systems have the disadvantage of being non-transparent even though they are miniaturized nowadays, i.e. this disadvantage becomes apparent when applied to transparent panels, such as automotive windshields. Even when hidden behind elements such as a rear-view mirror of a vehicle, these optical systems are often aesthetically not acceptable on a tilted window. The biggest disadvantage, however, is that these optical systems generally detect only in a narrow area, typically only in the size of the width of the light beam, i.e. the raindrop has to land precisely in that zone to activate the detection, which is a limiting factor as well.

EP 0 656 982 describes the placement of a non-transparent capacitive rain sensor comprising two electrodes separated by a distance smaller than the size of a raindrop on an external side of a frame of a tilted window. If rain is detected, a motor is activated to close the window. However, this solution only allows for detecting raindrops that land precisely on the capacitive rain sensor. Another disadvantage is that extra material is required for obtaining the sensing area, i.e. other than the material strictly necessary to build the tilted window. Another inconvenience of this solution is that the capacitive rain sensor is directly exposed to harsh conditions which leads to quick erosion or deterioration.

Summary of the Invention

An object of the present invention is to provide a panel comprising a first sheet of glass capable of detecting a liquid, gas or solid as well as a method of making the same.
An advantage of the present invention is the provision of a panel for precisely and reliably detecting a liquid, a gas or a solid, and further, capable of detecting a very small quantity of the liquid, the gas or the solid.

The above object is addressed by a panel, comprising a first sheet of glass, a first electrically conductive coating and a second electrically conductive coating, wherein the first electrically conductive coating and the second electrically conductive coating are provided on the first side of the first sheet of glass, the first electrically conductive coating and the second electrically conductive coating are electrically insulated from each other, the first electrically conductive coating and the second electrically conductive coating are adapted for generating an electric field on the first side of the first sheet of glass and/or on the second side of the first sheet of glass, and the first electrically conductive coating and the second electrically conductive coating are adapted with means for detecting a variation of the electric field on the first side of the first sheet of glass and/or on the second side of the first sheet of glass. In a preferred embodiment, the coatings can be transparent. As a matter of fact, according to such an embodiment, the present invention provides a capacitive rain sensor capable of detecting a very small quantity of the liquid, the gas or the solid and which keeps the panel transparency.

Accordingly, it is an essential idea of the invention that a liquid, a gas or a solid, preferably with a dielectric constant different from air, can be detected by the variation of the electric field on the first side of the first sheet of glass and/or on the second side of the first sheet of glass. Once the variation is detected, an appropriate action can be taken, such as closing a window. The panel can be provided as a glass or as a plastic panel, as a laminated glass panel, or as an insulating glass panel, wherein the panel may form a window of a vehicle, a house, or a plane.

The first electrically conductive coating and/or the second electrically conductive coating are preferably provided as coplanar and/or thin tin oxide coatings, e.g. indium tin oxide (ITO) films. The coating may be a chemical vapor deposition (CVD) coating or magnetron sputtered coating, for example. In order to obtain the electrical insulation between the first electrically conductive coating and the second electrically conductive coating, embodiments of the present invention provide an electrically conductive coat-
ing on the first side of the first sheet of glass, which is then separated into the first electrically conductive coating and into the second electrically conductive coating by laser ablation, masking, lift-off or chemical etching.

The electric field can be established by connecting an electrical power source to the first electrically conductive coating and to the second electrically conductive coating, respectively. In this way, the invention allows for a simple and precise detection of a solid or a fluid, i.e. a liquid or gas having a different dielectric constant from air and preferably in the area of the electrical insulation between the first electrically conductive coating and the second electrically conductive coating. Thus, it is possible to detect a liquid such as a raindrop in a reliable way without requiring any additional material such as known from the prior art.

According to another preferred embodiment of the invention, a non-coated or decoated perimeter zone is provided, which surrounds the first electrically conductive coating and the second electrically conductive coating, and wherein the first electrically conductive coating and the second electrically conductive coating are congruent with the first sheet of glass. Preferably, the non-coated or decoated perimeter zone has a width of 5 to 15 mm e.g. 10 mm. The non-coated or decoated perimeter can be provided as any non-electrically conductive coating, by applying an electrically conductive coating on the first sheet of glass, wherein the electrically conductive coating is congruent with the first sheet of glass, and wherein a part of the electrically conductive coating is removed, for example by laser ablation, lift-off or chemical etching, for creating the first electrical conductive coating, the second electrically conductive coating and the non-coated or decoated perimeter zone, or by using a masking system for creating the non-coated or decoated perimeter zone, the first electrically conductive coating and the second electrically conductive coating.

According to another preferred embodiment of the invention, a third electrically conductive coating is provided on the first side of the first sheet of glass between the first electrically conductive coating and the second electrically conductive coating, and wherein the third electrically conductive coating is electrically insulated from the first electrically conductive coating and from the second electrically conductive coating. In
this way, larger fringes can be created for the electric field, as the third electrically conductive coating is electrically insulated from the first electrically conductive coating and from the second electrically conductive coating.

According to another preferred embodiment of the invention, the non-coated or decoated perimeter zone surrounds the first electrically conductive coating, the second electrically conductive coating and the third electrically conductive coating, wherein the non-coated or decoated perimeter zone, the first electrically conductive coating, the second electrically conductive coating and the third electrically conductive coating are congruent with the first sheet of glass.

According to a preferred embodiment of the invention, a second sheet of glass and a spacer are provided, wherein the spacer is arranged between the first side of the first sheet of glass and the second sheet of glass. In this way, the first sheet of glass and the second sheet of glass are spaced from each other by the spacer. The distance between the first sheet of glass and the second sheet of glass can be filled with a gas, such as air, an inert gas such as nitrogen, argon or krypton, or with a vacuum. In this way, as the spacer is arranged between the first side of the first sheet of glass and the second sheet of glass, preferably either the first electrically conductive coating, the second electrically conductive coating, the third electrically conductive coating and/or the non-coated or decoated perimeter zone faces the spacer.

According to another preferred embodiment of the invention, an insulator plate is provided between the spacer and the first side of the first sheet of glass and/or between the spacer and the second sheet of glass. In case the spacer is made out of a metallic material, it is advantageous to use an insulator plate in order to avoid influences of the electric field due to the metallic material. Preferably, the insulator plate is provided as butyly.

In general, the spacer can be arranged anywhere in the panel. However, according to another preferred embodiment of the invention, the spacer is arranged in the area of the non-coated or decoated perimeter zone. In this way, the spacer is preferably arranged close to a border of the panel.
According to another preferred embodiment of the invention, four spacers are provided, and the first sheet of glass is rectangular, wherein in each edge of the rectangular first sheet of glass one spacer is arranged, respectively.

According to another preferred embodiment of the invention, a busbar and a conductor such as a wire are provided, wherein the busbar is arranged on the side of the first electrically conductive coating and/or on the side of the second electrically conductive coating facing away from the first sheet of glass and the conductor or wire is electrically connected to the busbar. In case of presence of a conductive coating such as a thin oxide layer, e.g. on the edge or side of the first electrically conductive coating and/or on the edge or side of the second electrically conductive coating facing away from the first sheet of glass, a silver paste can be applied onto the first electrically conductive coating and/or on the second electrically conductive coating. It is further preferred to electrically connect the conductor or wire to the busbar by means of gluing or soldering. In this way, electrical power can be supplied to the first electrically conductive coating and/or to the second electrically conductive coating via the conductor or wire that is electrically connected to the busbar, which is preferably electrically connected to the first electrically conductive coating and/or to the second electrically conductive coating.

According to another preferred embodiment of the invention, the spacer includes a hole, and the conductor or wire is fed through the hole from the outside of the panel to the inside of the panel. This allows for a convenient way to feed the conductor or wire from the outside of the panel to the inside of the panel.

According to another preferred embodiment of the invention, the conductor or wire is fed between the insulator plate and the first side of the first sheet of glass and/or between the insulator plate and the second sheet of glass from the outside of the panel to the inside of the panel. In this way, electrical power can be supplied from the outside of the panel to the inside of the panel via the conductor or wire to the first electrically conductive coating and/or to the second electrically conductive coating.

According to another preferred embodiment of the invention, the panel is transparent.
Preferably, the first sheet of glass, the second sheet of glass, the first electrically conductive coating, the second electrically conductive coating, the third electrically conductive coating and/or the non-coated or decoated perimeter zone are transparent. In this way, the panel can be used as a window for a vehicle, a plane or a house.

According to another preferred embodiment of the invention, the first electrically conductive coating and/or the second electrically conductive coating comprise an ultraviolet light filter, an infrared radiation filter and/or a thermal insulation. It is further preferred that the third electrically conductive coating comprises an ultraviolet light filter, an infrared radiation filter and/or a thermal insulation. In this way, according to the invention, at least one of the first, second and third electrically conductive coating provides a filtering and/or insulation means, as known from the prior art, and in addition the possibility to detect liquid, gas or solid, such as water or rain.

The present invention also provides a method of making a panel, the method comprising:

- providing a first electrically conductive coating and a second electrically conductive coating on a first side of a first sheet of glass, the first electrically conductive coating and the second electrically conductive coating being electrically insulated from each other,
- forming means for generating an electric field on the first side of the first sheet of glass and/or on the second side of the first sheet of glass, and
- forming means for detecting a variation of the electric field on the first side of the first sheet of glass and/or on the second side of the first sheet of glass.

The object of the invention is further addressed by a window, especially a roof window, preferably for a house, formed from or having a panel according to the invention. The object of the invention is furthermore addressed by a building with a window according to the invention.

These and other aspects of the invention will be apparent from and elucidated with reference to the embodiments described hereinafter.
Brief Description of the Drawings

In the drawings:

Fig. 1 schematically shows a side view of a panel according to a preferred embodiment of the invention,

Fig. 2 shows a top view of a panel according to another preferred embodiment of the invention,

Fig. 3 shows a side view of a panel according to another preferred embodiment of the invention,

Fig. 4 shows another side view of a panel according to another preferred embodiment of the invention,

Fig. 5 shows a top view of a panel according to another preferred embodiment of the invention, and

Fig. 6 shows a side view of a panel according to another preferred embodiment of the invention.

Detailed Description of the present invention

The drawings described are only schematic and are non-limiting. In the drawings, the size of some of the elements may be exaggerated and not drawn on scale for illustrative purposes. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measured cannot be used to advantage. Any reference signs in the claims should not be construed as limiting the scope.

Where the term "comprising" is used in the present description and claims, it does not exclude other elements or steps. Where an indefinite or definite article is used when referring to a singular noun e.g. "a" or "an", "the", this includes a plural of that noun unless something else is specifically stated.
Furthermore, the terms first, second and the like in the description and in the claims, are used for distinguishing between similar elements and not necessarily for describing a sequence, either temporally, spatially, in ranking or in any other manner. It is to be understood that the terms so used are interchangeable under appropriate circumstances and that the embodiments of the invention described herein are capable of operation in other sequences than described or illustrated herein.

Reference throughout this specification to "one embodiment" or "an embodiment" means that a particular feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, appearances of the phrases "in one embodiment" or "in an embodiment" in various places throughout this specification are not necessarily all referring to the same embodiment, but may. Furthermore, the particular features, structures or characteristics may be combined in any suitable manner, as would be apparent to one of ordinary skill in the art from this disclosure, in one or more embodiments.

Similarly it should be appreciated that in the description of exemplary embodiments of the invention, various features of the invention are sometimes grouped together in a single embodiment, figure, or description thereof for the purpose of streamlining the disclosure and aiding in the understanding of one or more of the various inventive aspects. This method of disclosure, however, is not to be interpreted as reflecting an intention that the claimed invention requires more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive aspects lie in less than all features of a single foregoing disclosed embodiment. Thus, the claims following the detailed description are hereby expressly incorporated into this detailed description, with each claim standing on its own as a separate embodiment of this invention.

Furthermore, while some embodiments described herein include some but not other features included in other embodiments, combinations of features of different embodiments are meant to be within the scope of the invention, and form different embodiments, as would be understood by those in the art. For example, in the following claims, any of the claimed embodiments can be used in any combination.
As can be seen from Fig. 1, according to a preferred embodiment of the invention, a panel 1 comprising a first sheet of glass 2 and a second sheet of glass 3 is provided. The first sheet of glass 2 and the second sheet of glass 3 are spaced from each other by means of two spacers 4. The distance 5 provided by the first sheet of glass 2, the second sheet of glass 3 and the two spacers 4 comprises a gas, such as air, or an inert gas such as nitrogen, argon or krypton, or a vacuum. A sealant 6 is provided between the first sheet of glass 2, a spacer 4 and the second sheet of glass 3 on the side of the spacer 4 facing away from the distance 5.

A first electrically conductive coating 7 and a second electrically conductive coating 8 are provided on the first side of the first sheet of glass 2 facing towards the distance 5. The first electrically conductive coating 7 and the second electrically conductive coating 8 are electrically insulated from each other. By applying electrical power to the first electrically conductive coating 7 and to the second electrically conductive coating 8 an electric field is generated, which is present on the first side of the first sheet of glass 2 facing towards the distance 5 and on the second side of the first sheet of glass 2 facing away from the distance 5, as can be seen from Fig. 1.

In this way, a solid or fluid object having a dielectric constant different from air such as a rain drop 10 that is close to or lands, (as indicated by arrow 11), on the second side of the first sheet of glass 2 facing away from the distance 5 leads to a variation of the electric field 9 as the dielectric constant of the solid or fluid object e.g. raindrop 10 is different from air. In other words, the variation of the electric field 9 due to the raindrop 10, landing 11 on the second side of the first sheet of glass 2 facing away from the distance 5 can be detected by measuring (thanks to a measuring equipment 100, e.g. a capacimeter referenced PSOC Capsense sold by CYPRESS SEMICONDUCTOR, that can be connected to the first electrically conductive coating 7 and the second electrically conductive coating 8) an electrical property of the first electrically conductive coating 7 and the second electrically conductive coating 8, e.g. its capacitance. In another embodiment, a solid or fluid material having a dielectric constant different from air such as a rain drop 10 that is close to or lands, (as indicated by arrow 11), on at least one side of the second sheet of glass 3 (preferably the external side of second sheet of glass 3) leads
to a variation of the part of the electric field 9 surrounding the second sheet of glass 3 as the dielectric constant of the solid or fluid object e.g. raindrop 10 is different from air. This variation can also be detected by measuring an electrical property of the first electrically conductive coating 7 and the second electrically conductive coating 8, e.g. its capacitance.

Fig. 2 shows a top view of the panel 1 according to another preferred embodiment of the invention. A third electrically conductive coating 12 is provided in between the first electrically conductive coating 7 and the second electrically conductive coating 8. The third electrically conductive coating 12 is electrically insulated from the first electrically conductive coating 7 and the second electrically conductive coating 8. In this way, as depicted in Fig. 3, larger fringes for the electric field 9 can be created.

The first electrically conductive coating 7, the second electrically conductive coating 8 and the third electrically conductive coating 9 are surrounded by a non-coated or decoated perimeter zone 13. The first electrically conductive coating 7, the second electrically conductive coating 8 and the third electrically conductive coating 13 are preferably transparent and can be made from a conductive oxide such as tin oxide of which indium tin oxide is one example. The coating may be applied, for example, by chemical vapor deposition or magnetron sputtering. The electrical insulation between the first electrically conductive coating 7 and the third electrically conductive coating 12, and between the third electrically conductive coating 12 and the second electrically conductive coating 8, respectively, can be obtained by laser ablation, lift-off, masking or chemical etching, for example.

The non-coated or decoated perimeter zone 13 can be obtained by a non-electrically conductive layer or by removing a conductive coating by, for example, laser ablation, lift-off, masking or chemical attack. The non-coated or decoated perimeter zone 13 preferably has a width of 5 to 15 mm, e.g. 10 mm.

In order to supply electrical power to the first electrically conductive coating 7 and/or to the second electrically conductive coating 8, a busbar 14 is provided. As can be seen from Fig. 4, a conductor such as a wire, or strip, tape or bar 15 is electrically connected
to the busbar 14 by means of solder or glue, wherein the busbar 14 is electrically connected to the first electrically conductive coating 7 by means of solder or glue.

As can be seen from Fig. 5, according to another preferred embodiment of the invention, the panel comprises four spacers 4, wherein in each edge of the rectangular panel 1 one spacer 4 is arranged, respectively. As can be seen further from Fig. 5, the wire 15 is fed through a hole in the spacer 4 from the outside of the panel 1 to the inside of the panel 1.

Alternatively, as depicted in Fig. 5, the conductor, e.g. wire 15 can be fed between an insulator plate 16 and the first side of the first sheet of glass 2 from the outside of the panel 1 to the inside of the panel 1. The insulator plate 16 preferably comprises butyle and is arranged between the second sheet of glass 3 and the spacer, and between the spacer 4 and the first sheet of glass 2. Use of insulator plate 16 is advantageous in case the spacer 4 is provided out of a metallic material for avoiding any influence of the electric field 9 due to the metallic material of the spacer 4.

The electrical power applied to the first electrically conductive coating 7 and the second electrically conductive coating 8 for creating the electric field 9 comprises for example a voltage of 10 V_{eff} at 100 kHz. When the capacitance value formed by the first electrically conductive coating 7 and the second electrically conductive coating 8 changes due to the raindrop 10, landing 11 on the second side of the first sheet of glass 2 facing away from the distance 5, an electrical property of the arrangement is changed, e.g. the AC current, for example, the root mean squared current is altered, therefore indicating the presence of the raindrop 10.

The required circuitry for supplying electrical power to the first electrically conductive coating 7 and the second electrically conductive coating 8 for creating the electric field 9 and for detecting the variation of the electric field 9 can be arranged inside the panel 1 to facilitate production, installation and maintenance of the panel 1. In this way, it becomes possible to avoid any conductors or wires 15 feeding into and/or out of the panel 1 by using adequate wireless interfaces of which Zigbee or Bluetooth are just two examples. Alternatively, the circuitry can be integrated into the first electrically conduc-
tive coating 7 and the second electrically conductive coating 8 by using surface mount components.

While the invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive; the invention is not limited to the disclosed embodiments. Other variations to be disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims. In the claims, the indefinite article "a" or "an" does not exclude a plurality. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. Any reference signs in the claims should not be construed as limiting scope.
Claims

1. Panel, comprising

   a first sheet of glass (2), a first electrically conductive coating (7), and a second
   electrically conductive coating (8), wherein

   the first electrically conductive coating (7) and the second electrically conduc-
   tive coating (8) are provided on the first side of the first sheet of glass (2),

   the first electrically conductive coating (7) and the second electrically conduc-
   tive coating (8) are electrically insulated from each other,

   the first electrically conductive coating (7) and the second electrically conduc-
   tive coating (8) are adapted for generating an electric field (9) at least on the first side of
   the first sheet of glass (2) and/or on the second side of the first sheet of glass (2), and

   a measuring unit adapted for detecting a variation of the electric field (9) on the
   first side of the first sheet of glass (2) and/or on the second side of the first sheet of glass
   (2).

2. Panel (1) according to claim 1, wherein a non-coated or decoated perimeter zone
   (13) is provided, the non-coated or decoated perimeter zone (13) surrounding the first
   electrically conductive coating (7) and the second electrically conductive coating (8),

   and wherein the non-coated or decoated perimeter zone (13), the first electrically con-
   ductive coating (7) and the second electrically conductive coating (8) are congruent
   with the first sheet of glass (2).

3. Panel (1) according to claim 1 or 2, wherein a third electrically conductive coat-
   ing (12) is provided on the first side of the first sheet of glass (2) between the first elec-
   trically conductive coating (7) and the second electrically conductive coating (8), and

   the third electrically conductive coating (12) is electrically insulated from the first elec-
   trically conductive coating (7) and from the second electrically conductive coating (8).

4. Panel (1) according to claim 3, wherein the non-coated or decoated perimeter
   zone (13) surrounds the first electrically conductive coating (7), the second electrically
   conductive coating (8) and the third electrically conductive coating (12), and wherein

   the perimeter decoating (13), the first electrically conductive coating (7), the second
electrically conductive coating (8) and the third electrically conductive coating (12) are congruent with the first sheet of glass (2).

5. Panel (1) according to any of claims 1 to 4, wherein a second sheet of glass (3) and a spacer (4) are provided, and wherein the spacer (4) is arranged between the first side of the first sheet of glass (2) and the second sheet of glass (3).

6. Panel (1) according to claim 5, wherein an insulator plate (16) is provided between the spacer (4) and the first side of the first sheet of glass (2) and/or between the spacer (4) and the second sheet of glass (3).

7. Panel (1) according to claim 5 or 6, wherein the spacer (4) is arranged in the area of the non-coated or decoated perimeter zone (13).

8. Panel (1) according to any of claims 5 to 7, wherein four spacers (4) are provided and the first sheet of glass (2) is rectangular, and in each edge of the rectangular first sheet of glass (2) one spacer (4) is arranged, respectively.

9. Panel (1) according to any of claims 1 to 8, wherein a busbar (14) and a conductor (15) are provided, the busbar (14) is arranged on the side of the first electrically conductive coating (7) and/or on the side of the second electrically conductive coating (8) facing away from the first sheet of glass (2) and the conductor (15) is electrically connected to the busbar (14).

10. Panel (1) according to claim 9, wherein the spacer (4) has a hole, and the conductor (15) is fed through the hole from the outside of the panel (1) to the inside of the panel (1).

11. Panel (1) according to claim 9 or 10, wherein the conductor (15) is fed between the insulator plate (16) and the first side of the first sheet of glass (2) and/or between the insulator plate (16) and the second sheet of glass (3) from the outside of the panel (1) to the inside of the panel (1).
12. Panel (1) according to any of claims 1 to 11, wherein the panel (1) is transparent.

13. Panel (1) according to any of claims 1 to 12, wherein the first electrically conductive coating (7) and/or the second electrically conductive coating (8) comprise an ultraviolet light filter, an infrared radiation filter and/or a thermal insulation.

14. Window, especially a roof window, preferably for a house, with a panel (1) according to any of claims 1 to 13.

15. Building with a window according to claim 14.

16. A method of making a panel, the method comprising:
providing a first electrically conductive coating and a second electrically conductive coating on a first side of a first sheet of glass, the first electrically conductive coating and the second electrically conductive coating being electrically insulated from each other,
forming means for generating an electric field on the first side of the first sheet of glass and/or on the second side of the first sheet of glass, and
forming means for detecting a variation of the electric field on the first side of the first sheet of glass and/or on the second side of the first sheet of glass.
**INTERNATIONAL SEARCH REPORT**

**International application No**
PCT/EP2008/064539

**A. CLASSIFICATION OF SUBJECT MATTER**

**INV.** G01N27/22 B60S1/08

According to International Patent Classification (IPC) and national classification and IPC.

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

E04D GOIN B60S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data bases consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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Further documents are listed in the continuation of Box C

See patent family annex

**Date of the actual completion of the international search**

18 June 2009

**Date of mailing of the international search report**

26/06/2009

Name and mailing address of the ISA/

European Patent Office, P B 5618 Patentlaan 2 NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040, Fax (+31-70) 340-3016

Authorized officer

Stussi, Elisa
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