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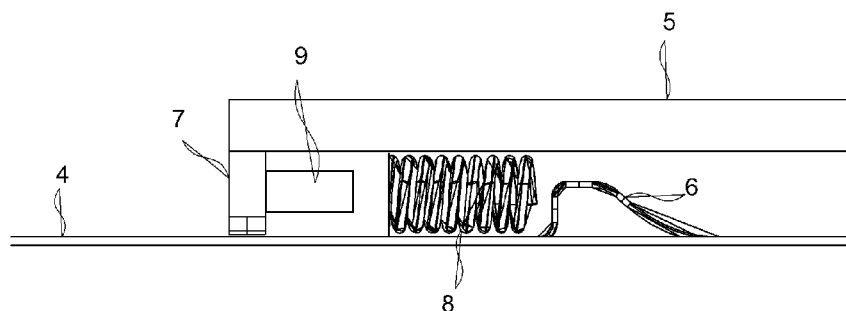
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(54) **Title:** A WASHING MACHINE

**Figure 3**



(57) **Abstract:** The washing machine (1) of the present invention comprises a tub (2); a drum (3) positioned inside the tub (2) and wherein the laundry to be washed is placed; a detergent dispenser (4) having one or more than one partition wherein the cleaning agents with different features are placed; a housing (5) wherein the detergent dispenser (4) is placed; a first claw (6) connected to the detergent dispenser (4) and a second claw (7) connected to the housing (5), the first and the second claw (6, 7) being oppositely disposed respectively on the detergent dispenser (4) and the housing (5) and in the same direction, bearing against one another when the detergent dispenser (4) is pulled thereby preventing dislodgement of the detergent dispenser (4) from the housing (5); wherein a dampening element (8) is placed between the first claw (6) and the second claw (7), that dampens the movement of the detergent dispenser (4), thereby preventing the impact of the first claw (6) with the second claw (7).



**Description****A WASHING MACHINE**

- [0001] The present invention relates to a washing machine that comprises a detergent dispenser.
- [0002] In the state of the art, washing machines comprise detergent dispensers having one or more than one partition wherein cleaning agents with different features (detergent, softener etc.) are placed. The said detergent dispensers are generally of drawer type and are opened by being pulled by the user from the housing wherein they are placed and after the required cleaning agents are put therein, are pushed to be seated into the housing. Claws are oppositely disposed at the inlet of the housing and on the detergent dispenser for preventing the detergent dispenser from entirely getting out of the housing wherein it is placed.
- [0003] When the detergent dispenser is pulled by the user, the claws impact one another, stopping the movement and the detergent dispenser is prevented from being dislodged entirely from the housing.
- [0004] During this impact, the claws may be damaged depending on the force of the impact and the resulting noise causes inconvenience for the user.
- [0005] In the state of the art Korean Patent Application No. KR20070059440, the use of a magnet is disclosed, that is disposed behind the detergent dispenser and the housing in order to decrease the impact noise generated during the closing of the detergent dispenser.
- [0006] In the state of the art Korean Patent Application No. KR20070059437, a device with rollers is disclosed, that is developed in order to decrease the noise generated during the opening/closing of the detergent dispenser.
- [0007] The aim of the present invention is the realization of a washing machine wherein the noise generated while the detergent dispenser is entirely opened is decreased.
- [0008] The washing machine realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a dampening element placed between a first claw disposed on the detergent dispenser and a second claw disposed on the housing.
- [0009] By means of the present invention, the first claw and the second claw are

prevented from directly impacting one another thereby preventing impact-induced damage and also avoiding the noise generated while the detergent dispenser is being entirely opened.

[0010] In an embodiment of the present invention, a helical spring is used as the dampening element. In another embodiment of the present invention, a leaf spring can be used as the dampening element.

[0011] In another embodiment of the present invention, the dampening element is mounted on the first claw or the second claw by means of a fixing element.

[0012] In yet another embodiment of the present invention, the dampening element is mounted on a cylindrical pin disposed on the second claw and is snap-fittingly fixed therein.

[0013] By means of the present invention, while the detergent dispenser is being entirely opened, the first claw and the second claw are prevented from directly impacting one another. By means of the dampening element placed between the two claws, the claws impact the dampening element inside the housing while the detergent dispenser is being entirely opened, and the movement of the detergent dispenser inside the housing is slowed down by means of the dampening element thereby eliminating the noise originating from the impact of the two claws to one another. Furthermore, by means of the present invention, the two claws are prevented from breaking by avoiding direct impact.

[0014] A washing machine realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0015] Figure 1 – is the schematic view of a washing machine.

[0016] Figure 2 – is the perspective view of the detergent dispenser and the housing.

[0017] Figure 3 – is the detailed view of the dampening element and the pin in an embodiment of the present invention.

[0018] Figure 4 – is the detailed view of the dampening element after being mounted on the pin.

[0019] Figure 5 – is the detailed view of another embodiment of the present invention.

[0020] The elements illustrated in the figures are numbered as follows:

1. Washing machine
2. Tub
3. Drum
4. Detergent dispenser
5. Housing
6. First claw
7. Second claw
8. Dampening element
9. Pin
10. Fixing element

[0021] The washing machine (1) comprises a tub (2); a drum (3) positioned inside the tub (2) and wherein the laundry to be washed is placed; a detergent dispenser (4) having one or more than one partition wherein the cleaning agents (detergent, softener etc.) with different features are placed; a housing (5) wherein the detergent dispenser (4) is placed; a first claw (6) connected to the detergent dispenser (4) and a second claw (7) connected to the housing (5), the first and the second claw (6, 7) being oppositely disposed respectively on the detergent dispenser (4) and the housing (5) and in the same direction, bearing against one another when the detergent dispenser (4) is pulled thereby preventing dislodgement of the detergent dispenser (4) from the housing (5).

[0022] The washing machine (1) of the present invention comprises a dampening element (8) that is placed between the first claw (6) and the second claw (7), that dampens the movement of the detergent dispenser (4) while being pulled out of the housing (5) thereby preventing the impact of the first claw (6) with the second claw (7) and thus enabling the generated impact noise to be decreased.

[0023] In the washing machine (1) of the present invention, the detergent dispenser (4) moves inside the housing (5) by being pulled while the detergent dispenser (4) is being entirely opened and the first claw (6) moves closer to the second claw (7) by moving in the horizontal direction. When the detergent dispenser (4) changes to the entirely open position in the housing (5), the first claw (6) and the second claw (7) impact the

dampening element (8) disposed therebetween, the movement of the detergent dispenser (4) inside the housing (5) is dampened and the detergent dispenser (4) stops. By means of the dampening element (8), the first claw (6) and the second claw (7) do not impact one another and the movement is dampened by the dampening element (8). Thus, the noise is prevented from being generated due to the two claws (6 and 7) impacting one another and breaking of the two claws (6 and 7) by impacting one another is avoided.

- [0024] In an embodiment of the present invention, the detergent dispenser (4) is a drawer type detergent dispenser (4). In this embodiment, the detergent dispenser (4) moves in the horizontal direction inside the housing (5). Therefore, the dampening element (8) can stretch and compress in the horizontal direction between the first claw (6) and the second claw (7) (Figure 2 – Figure 5).
- [0025] In an embodiment of the present invention, the dampening element (8) is a helical spring (Figure 3, Figure 4).
- [0026] In another embodiment of the present invention, the dampening element (8) is a leaf spring (Figure 5).
- [0027] In an embodiment of the present invention, the dampening element (8) is produced from elastomeric material, for example rubber, or from stainless steel. Thus, the dampening element (8) disposed inside the detergent dispenser (4) and the housing (5) having contact with water is prevented from being worn down due to conditions like water and humidity.
- [0028] In an embodiment of the present invention, the washing machine (1) comprises a fixing element (10) that enables the dampening element (8) to be fixed on the first claw (6) or the second claw (7) (Figure 5). A screw is preferably used as the fixing element (10). In this embodiment, one end of the dampening element (8) is fixed to the first or second claw (6 or 7) and the other end is free. In this embodiment of the present invention, if for example one end of the dampening element (8) is fixed to the second claw (7), the first claw (6) moves with respect to the second claw (7) when the detergent dispenser (4) is opened entirely and the first claw (6) impacts the free end of the dampening element (8). During this impact, the first

claw (6) pushes the free end of the dampening element (8) and moves towards the fixed end of the dampening element (8). Consequently, the movement of the detergent dispenser (4) inside the housing (5) slows down and the movement is dampened by means of the dampening element (8).

[0029] In another embodiment of the present invention, the washing machine (1) comprises a pin (9) that is disposed on the second claw (7), that extends in the horizontal direction in the direction of the movement of the detergent dispenser (4) inside the housing (5), having a hollow or solid cylindrical shape and whereon the dampening element (8) is mounted (Figure 3). The dampening element (8), for example the helical spring, is preferably snap-fittingly fixed on or in the pin (9). In this embodiment, one end of the dampening element (8) is mounted to the pin (9) and the other end is free. When the detergent dispenser (4) is desired to be opened entirely in the housing (5), the first claw (6), that moves towards the second claw (7) as the detergent dispenser (4) is pulled, contacts the free end of the dampening element (8) and provides the dampening of the movement by compressing the dampening element (8).

[0030] By means of the present invention, the momentary impact noise generated while the detergent dispenser (4) is being entirely opened is prevented. Consequently, the plastic – plastic impact-induced noise is eliminated and at the same time the quality perception of the users about the washing machine is improved. Moreover, breaking of the two claws (6, 7) due to impacting one another is prevented during usage for a long period of time.

## Claims

1. A washing machine (1) comprising a tub (2); a drum (3) positioned inside the tub (2) and wherein the laundry to be washed is placed; a detergent dispenser (4) having one or more than one partition wherein the cleaning agents are placed; a housing (5) wherein the detergent dispenser (4) is placed; a first claw (6) connected to the detergent dispenser (4) and a second claw (7) connected to the housing (5), the first and the second claw (6, 7) being oppositely disposed respectively on the detergent dispenser (4) and the housing (5) and in the same direction, bearing against one another when the detergent dispenser (4) is pulled thereby preventing dislodgement of the detergent dispenser (4) from the housing (5), **characterized by** a dampening element (8) that is placed between the first claw (6) and the second claw (7), that dampens the movement of the detergent dispenser (4) while being pulled out of the housing (5) thereby preventing the impact of the first claw (6) with the second claw (7).
2. A washing machine (1) as in Claim 1, **characterized by** a drawer type detergent dispenser (4).
3. A dishwasher (1) as in Claim 1 and 2, **characterized by** the detergent dispenser (4) that moves in the horizontal direction inside the housing (5).
4. A washing machine (1) as in any one of the above claims, **characterized by** the dampening element (8) that is disposed between the first claw (6) and the second claw (7) and that can stretch and can be compressed in the horizontal direction.
5. A washing machine (1) as in any one of the above claims, **characterized by** the dampening element (8) which is a helical spring.
6. A washing machine (1) as in any one of the Claims 1 to 4, **characterized by** the dampening element (8) which is a leaf spring.
7. A washing machine (1) as in Claim 5 or 6, **characterized by** the dampening element (8) that is produced from stainless steel.
8. A washing machine (1) as in any one of the Claims 1 to 4, **characterized by** the dampening element (8) that is produced from elastomeric material.
9. A washing machine (1) as in any one of the above claims, **characterized by** a fixing element (10) that enables the dampening element (8) to be fixed on the

first claw (6) or the second claw (7).

10. A washing machine (1) as in any one of the above claims, **characterized by** a pin (9) that is disposed on the second claw (7), that extends in the movement direction of the detergent dispenser (4) inside the housing (5), having a hollow cylindrical form and whereon the dampening element (8) is mounted.



Figure 1

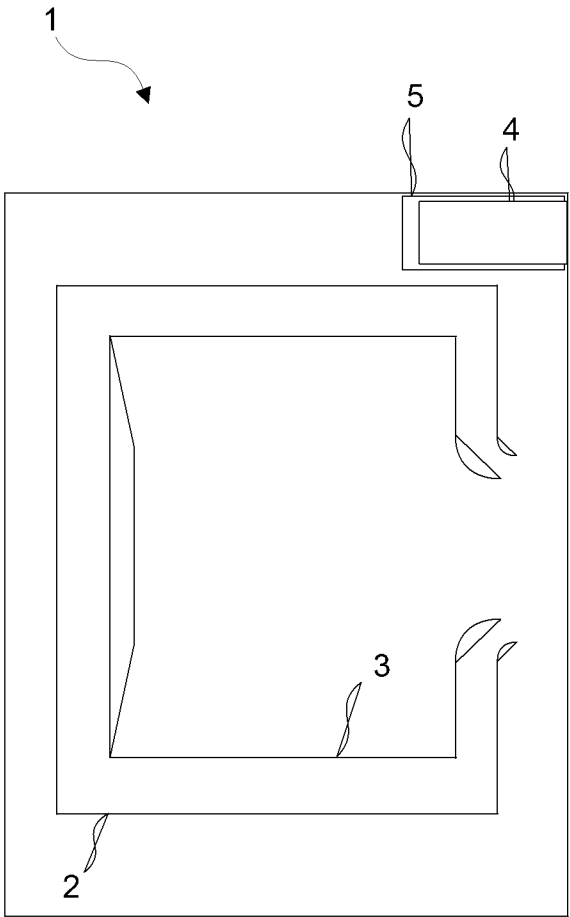


Figure 2

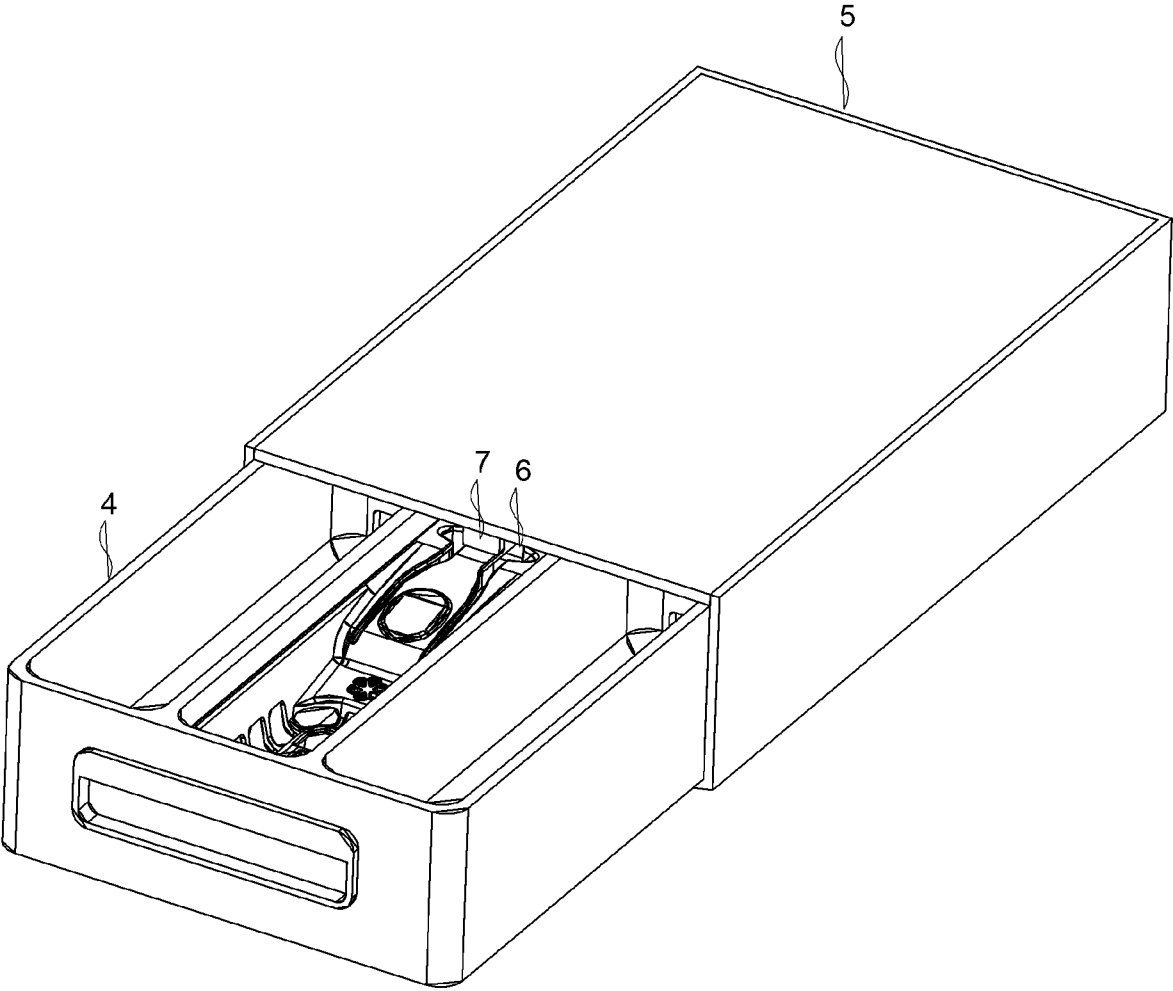


Figure 3

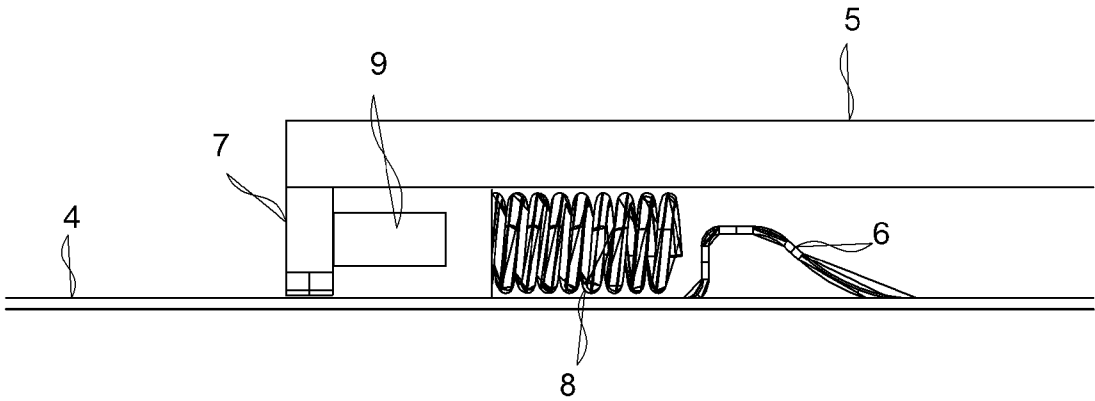


Figure 4

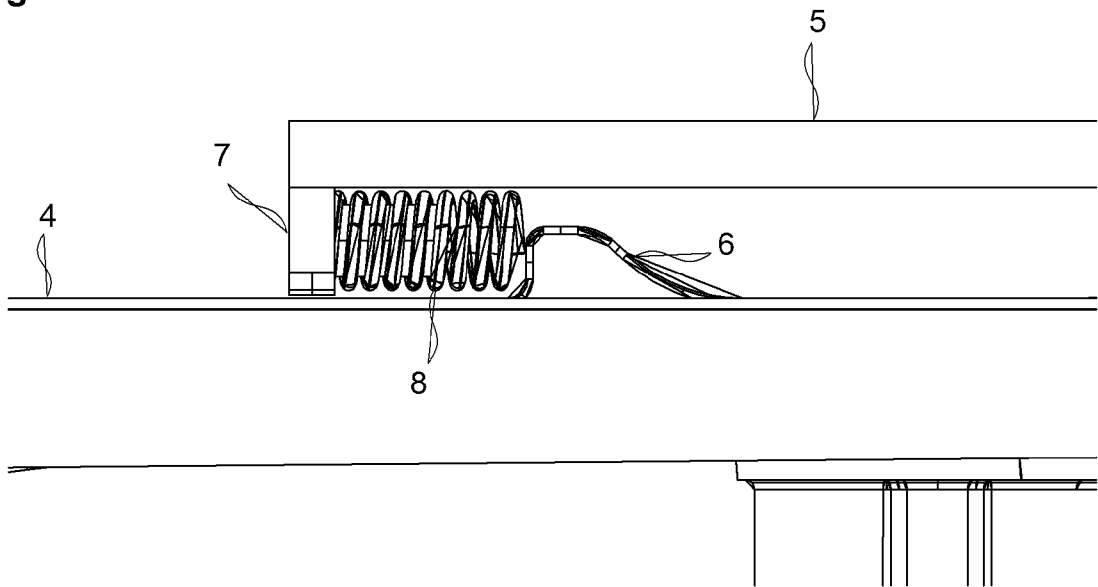
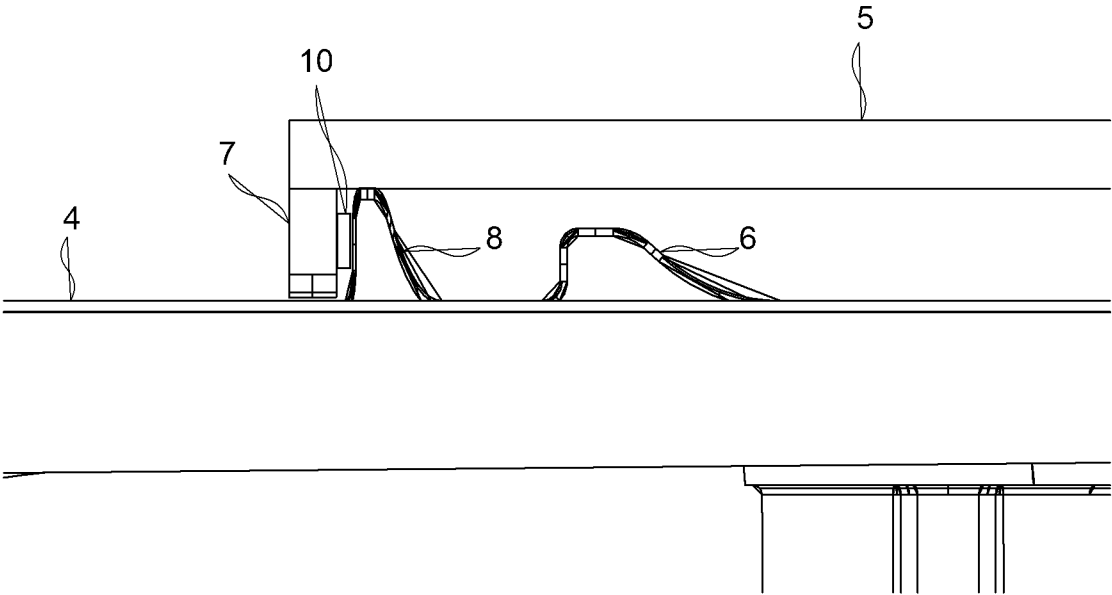


Figure 5



# INTERNATIONAL SEARCH REPORT

International application No  
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A. CLASSIFICATION OF SUBJECT MATTER  
INV. D06F39/02  
ADD. A47B88/16

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                | Relevant to claim No. |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y         | DE 10 2010 061097 A1 (VESTEL BEYAZ ESYA SANAYI VE TICARET AS [TR])<br>9 June 2011 (2011-06-09)<br>paragraphs [0015] - [0024]<br>figures 1-5       | 1-10                  |
| Y         | -----<br>US 2004/222723 A1 (FITZ HELMUT [AT])<br>11 November 2004 (2004-11-11)<br>paragraph [0008]<br>paragraphs [0030] - [0046]<br>figures 1-17  | 1-10                  |
| A         | -----<br>EP 1 903 136 A1 (LG ELECTRONICS INC [KR])<br>26 March 2008 (2008-03-26)<br>paragraphs [0017] - [0039]<br>figures 1-6<br><br>-----<br>-/- | 1-5,9                 |



Further documents are listed in the continuation of Box C.



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Date of the actual completion of the international search

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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2015/077013

| C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                                                                                                                                   |                       |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Category*                                            | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                | Relevant to claim No. |
| A                                                    | EP 2 471 991 A2 (SAMSUNG ELECTRONICS CO LTD [KR]) 4 July 2012 (2012-07-04)<br>paragraphs [0022] - [0033]<br>paragraph [0043]<br>figures 1-4, 7<br>-----                                                           | 1-3                   |
| A                                                    | WO 2008/072844 A1 (LG ELECTRONICS INC [KR]; SON CHANG-WOO [KR]; JANG HO-SUNG [KR]; KIM HY) 19 June 2008 (2008-06-19)<br>paragraphs [0043] - [0052]<br>paragraphs [0159] - [0165]<br>figures 1, 2, 24, 25<br>----- | 1-3                   |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2015/077013

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---------------------|----------------------------|---------------------|
| DE 102010061097 A1                        | 09-06-2011          | NONE                       |                     |
| -----                                     |                     |                            |                     |
| US 2004222723 A1                          | 11-11-2004          | CN 1550174 A               | 01-12-2004          |
|                                           |                     | DK 1475014 T3              | 13-11-2006          |
|                                           |                     | EP 1475014 A1              | 10-11-2004          |
|                                           |                     | ES 2268525 T3              | 16-03-2007          |
|                                           |                     | US 2004222723 A1           | 11-11-2004          |
| -----                                     |                     |                            |                     |
| EP 1903136 A1                             | 26-03-2008          | CN 101148815 A             | 26-03-2008          |
|                                           |                     | EP 1903136 A1              | 26-03-2008          |
|                                           |                     | KR 20080026808 A           | 26-03-2008          |
|                                           |                     | US 2008072630 A1           | 27-03-2008          |
| -----                                     |                     |                            |                     |
| EP 2471991 A2                             | 04-07-2012          | EP 2471991 A2              | 04-07-2012          |
|                                           |                     | KR 20120079403 A           | 12-07-2012          |
|                                           |                     | US 2012167637 A1           | 05-07-2012          |
| -----                                     |                     |                            |                     |
| WO 2008072844 A1                          | 19-06-2008          | AU 2007332341 A1           | 19-06-2008          |
|                                           |                     | EP 2106472 A1              | 07-10-2009          |
|                                           |                     | US 2010275659 A1           | 04-11-2010          |
|                                           |                     | WO 2008072844 A1           | 19-06-2008          |
| -----                                     |                     |                            |                     |