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(71) Applicant: **ARCELIK ANONIM SIRKETI** [TR/TR];
Sutluce Karaagac Caddesi No: 2/6 Beyoglu, 34445 ISTAN-
BUL (TR).

(72) Inventors: **ERMAN, Caner**; E5 Ankara Asfalti Uzeri, Tu-
zla, 34950 ISTANBUL (TR). **SAHIN, Sefer**; E5 Ankara
Asfalti Uzeri, Tuzla, 34950 ISTANBUL (TR). **GURCAN,
Bekir**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 ISTANBUL
(TR). **DANISMAN, Ahmet, Muhittin**; E5 Ankara Asfalti
Uzeri, Tuzla, 34950 ISTANBUL (TR).

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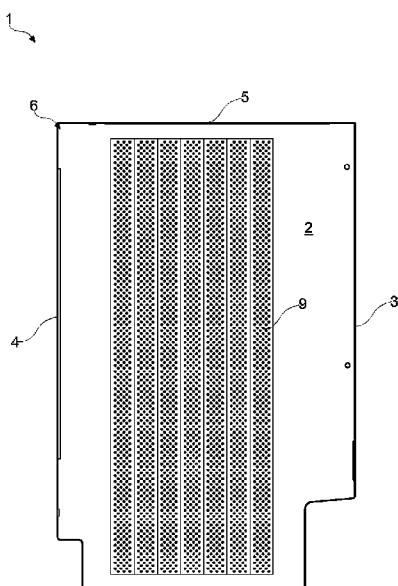
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(54) Title: A HOUSEHOLD APPLIANCE COMPRISING A DAMPING MEMBER

Figure 1



(57) Abstract: The present invention relates to a household appliance (1) comprising a body (6) having at least two opposite side walls (2), a front wall (3) which interconnects the side walls (2) from the ends thereof at the front side, a rear wall (4) which interconnects the side walls (2) from the ends thereof at the rear side and a top wall (5) which interconnects the side walls (2) from the upper ends thereof, whereby a plurality of damping members (9) are placed onto at least one of the two opposite side walls (2), the rear wall (4) or the top wall (5) and each having at least one carrier (7) and at least one damping material (8) in communication with the carrier (7) and at least used for damping noise and/or vibrations.



Description**A HOUSEHOLD APPLIANCE COMPRISING A DAMPING MEMBER**

- [0001] The present invention relates to a household appliance comprising a damping member.
- [0002] During the use of household appliances such as laundry washing machine, dishwasher, laundry dryer, etc., vibrations are generated on the body and said vibrations cause the household appliance to generate noise. In the state of the art household appliances, especially in dishwashers, top plates, which are preferably disposed onto the body and which have felt material for sound damping, are used in order to damp the noise generated due to said vibrations. However, from time to time said household appliances are preferred to be used in the house as built-in appliances which are installed into a space which is formed, for example, on the kitchen counter or in a cabinet and which has a certain size. In such cases, said top plate is required to be removed in order to install the household appliance into said space. In this case, removing the top plate requires effort, and the removed top plate occupies space when stored and noise damping provided by the top plate decreases, causing the operational noise of the household appliance to increase.
- [0003] In the state of the Turkish Patent Document No. TR2018/12743, a household appliance is disclosed, comprising a damping member which minimizes the noise generated during operation.
- [0004] The aim of the present invention is the realization of a household appliance which can be used as a standalone or built-in appliance and which comprises a damping member for damping the noise and/or vibrations generated during the operation thereof.
- [0005] The household appliance realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof comprise a plurality of damping members which are placed onto at least one of the two opposite side walls, the rear wall or the top wall and each having at least one carrier and at least one damping material in communication with the carrier and at least used for damping noise and/or vibrations. The household appliance is an appliance such as dishwasher,

laundry washing and/or drying machine which generates noise due to vibrations and/or shakes during the operation thereof. Vibration or noise generated during the operation of the household appliance is at least partially damped by the damping material in the damping member. In the preferred embodiment of the present invention, the carrier is produced from a rigid material such as plastic and the damping material is a material for damping noise and/or vibration such as felt, fiber, sponge, etc. By means of the rigid structure of the carrier, the damping members placed onto the relevant wall increase the rigidity of said wall in addition to noise and/or vibration damping, thus increasing the durability of said wall against impacts during transport.

- [0006] In an embodiment of the present invention, the damping member comprises a carrier in the form of a hollow box and at least one damping material which is placed into the carrier. In the preferred embodiment of the present invention, the carrier comprises at least one housing therein which is configured to keep the damping material immobile. By placing the damping material into the carrier, the damping material is enabled to be affected at the minimum by the ambient conditions such as temperature, moisture, etc. in the course of time and protected against external factors. Thus, the damping material can be used for a long time without being replaced.
- [0007] In a derivative of this embodiment of the present invention, the carrier comprises at least one hole arranged on at least one surface thereof. In this embodiment, the damping member is placed onto at least one wall such that the surface of the carrier with the hole thereon contacts the side wall and/or rear wall and/or top wall whereon the damping member is to be disposed. By means of said hole, the damping material is enabled to contact the wall whereon the damping member is disposed and to efficiently carry out the noise and/or vibration damping function.
- [0008] In an embodiment of the present invention, the damping member comprises a carrier and at least one damping material which is fixed onto the carrier by being adhered onto at least one surface of the carrier. By easily fixing the damping material onto at least one surface of the carrier

by adhesion, advantage in assembly and labor is ensured. In this embodiment, the damping member is disposed onto at least one wall such that the surface of the carrier whereon the damping material is adhered contacts the side wall and/or rear wall and/or top wall. Thus, the damping material is enabled to contact the wall whereon the damping member is disposed and to efficiently carry out the noise and/or vibration damping function.

[0009] In an embodiment of the present invention, the damping member comprises a carrier and at least one damping material which is fixed onto the carrier preferably by snap-fitting. In an example of this embodiment of the present invention, the carrier comprises an opening at least one surface thereof and a flexible locking member such as claw on at least one end of the opening, and the damping material comprises at least one slot which is configured to receive the locking member. In this embodiment, in order to fix the damping material onto the carrier, a force sufficient at least to stretch the locking member is applied onto the damping material so as to insert the same into the carrier through the opening on the carrier. When the slot and the locking member align with each other while the damping material is being inserted through the opening, the locking member enters the slot and prevents the damping material from moving further, and thus the damping material is fixed onto the carrier. By easily fixing the damping material onto at least one surface of the carrier by snap-fitting with simple connection members, advantage in assembly and labor is ensured. In this embodiment, the damping member is disposed onto at least one wall such that the surface of the carrier whereon the damping material is fixed contacts the side wall and/or rear wall and/or top wall. Thus, the damping material is enabled to contact the wall whereon the damping member is disposed and to efficiently carry out the noise and/or vibration damping function.

[0010] In an embodiment of the present invention, the household appliance comprises at least one channel which is positioned on at least one of the side walls, the rear wall or the top wall and which is configured to receive the damping members. In the preferred embodiment of the present

invention, the channel linearly extends on the relevant door from one end to the other. In the preferred embodiment of the present invention, a plurality of channels which extend parallel to each other are arranged on the relevant wall. In the preferred embodiment of the present invention, the channel is configured to keep the damping members therein fixed unless an external force is applied thereon. In this embodiment, the damping members are placed into the relevant channel so as to be kept fixed in the channel. Thus, the damping members are prevented from even at least partially moving in the channel due to movements caused by the operation of the household appliance.

[0011] In an embodiment of the present invention, the household appliance comprises at least two channels which are positioned on at least two connected walls among the side walls, the rear wall or the top wall and which are configured to align with each other at the joint between the walls and to receive the damping members. In this embodiment of the present invention, for example in case the household appliance is to be used in a space under furniture in the house and the height of the household appliance is more than the height of said space, the damping members placed in to the channels arranged on the top wall of the household appliance during the production stage are moved in the relevant channel preferably at the installation space of the household appliance so as to be transferred into the channels on the rear wall to which said channel connects. Thus, the height of the household appliance can be easily decreased without removing any component, enabling the household appliance to be easily installed in place.

[0012] In an embodiment of the present invention, the household appliance comprises at least one movement blocking member which can be shifted between two positions which are a first position wherein the damping members are allowed to move from the channel on a wall to the channel on the other wall at the point where the channels on different walls almost join with each other, and a second position wherein the damping members are prevented from moving from the channel on a wall to the channel on the other wall. In an exemplary embodiment of the present invention, said

movement blocking member is a rigid structure such as wall, fins, etc. which at least partially blocks the relevant channels preferably at the joints. In this embodiment, for example, the damping members in the channel on the top wall are prevented from unintentionally moving in the relevant channel and from entering the channel on the rear wall with which said channel joins.

- [0013] In an embodiment of the present invention, the household appliance comprises at least one actuation member which is in communication with the movement blocking member and which is configured to actuate the movement blocking member at least so as to shift the movement blocking member from the first position to the second position or from the second position to the first position. In an exemplary embodiment of the present invention, the actuation member is a latch which, upon applying a force thereon, shifts the movement blocking member from the first position to the second position or from the first position to the second position. In this embodiment, for example, when the damping members in the channel on the top wall are desired to be moved in the relevant channel to be transferred to the channel on the rear wall with which said channel joins, the actuation member actuates the movement blocking member so as to shift from the first position to the second position, thus allowing the transfer of the damping member between the two channels.
- [0014] In an embodiment of the present invention, the carrier comprises at least one connection member. In this embodiment, by interconnecting the connection members on the carriers of at least two damping members joined with each other in the channel, said at least one two damping members are enabled to joined with each other. In an exemplary embodiment of the present invention, each carrier comprises at least one recess and at least one protrusion which is configured to enter said recess so as to be securely retained in the recess. By inserting the protrusion on at least one of the adjoined carriers in the channel into the relevant recess of the adjacent carrier, the adjoined damping members are enabled to be joined with each other. Thus, for example, when the damping members in the channel on the top wall are desired to be moved in the relevant

channel so as to be transferred into the channel on the rear wall with which said channel joins, the damping members, which are joined with each other by means of the connection members, are enabled to move in the channel as a whole. Consequently, less effort and time is spent with respect to individually moving each damping member.

[0015] By means of the present invention, vibration and noise generated during the operation of a household appliance such as dishwasher, laundry washing and/or drying machine, which generates vibration during operation and/or noise due to shakes are enabled to be efficiently damped by means of the damping members which can be repositioned on the body of the household appliance. Moreover, by means of the present invention, the household appliance can be used as a standalone or built-in appliance as per user preference without removing any component of the household appliance by means of the damping members which can be repositioned on the body.

[0016] The household appliance realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0017] Figure 1 - is the schematic view of the household appliance of the present invention.

[0018] Figure 2 - is the schematic view of the damping member in the household appliance in an embodiment of the present invention.

[0019] Figure 3 - is the schematic view of the damping member in the household appliance in another embodiment of the present invention.

[0020] Figure 4 - is the schematic view of the damping member in the household appliance in yet another embodiment of the present invention.

[0021] The elements illustrated in the figures are numbered as follows:

1. Household appliance
2. Side wall
3. Front wall
4. Rear wall
5. Top wall
6. Body
7. Carrier

8. Damping material

9. Damping member

[0022] The household appliance (1) comprises a body (6) having at least two opposite side walls (2), a front wall (3) which interconnects the side walls (2) from the ends thereof at the front side, a rear wall (4) which interconnects the side walls (2) from the ends thereof at the rear side and a top wall (5) which interconnects the side walls (2) from the upper ends thereof (Figure 1). The household appliance (1) is an appliance such as dishwasher, laundry washing and/or drying machine which generates noise due to vibrations during the operation thereof. The body (6) is in the form of a box formed by interconnecting the side walls (2), the front wall (3), the rear wall (4) and the top wall (5). The body (6) preserves the components which are used for carrying out the functions of the household appliance (1).

[0023] The household appliance (1) comprises a plurality of damping members (9) which are placed onto the side walls (2), the rear wall (4) or the top wall (5) and each having at least one carrier (7) and at least one damping material (8) in communication with the carrier (7) and at least used for damping noise and/or vibrations. The damping members (9) are placed onto the side wall (2) and/or the rear wall (4) and/or the top wall (5) such that the damping material (8) contacts the side wall (2) and/or the rear wall (4) and/or the top wall (5) whereon the damping members (9) are placed and thus the noise and/or vibrations generated during the operation of the household appliance (1) are damped. In the preferred embodiment of the present invention, the damping members (8) are adjacently placed onto the side wall (2) and/or the rear wall (4) and/or the top wall (5) without any gaps therebetween, and the household appliance (1) comprises a sufficient number of damping members (9) to cover the entire surface of the side wall (2) and/or the rear wall (4) and/or the top wall (5) whereon the damping members (9) are placed. Thus, any leaks are prevented. In the preferred embodiment of the present invention, the carrier (7) is produced from plastic and the damping material (8) is produced from a material for damping noise and/or vibration such as felt, fiber, sponge, etc.

- [0024] In an embodiment of the present invention, the damping member (9) comprises a carrier (7) having at least one housing therein and at least one damping material (8) which is fixed into said housing. In this embodiment, by placing the damping material (8) into the carrier (7), the damping material (8) is enabled to be affected at the minimum by the ambient conditions such as temperature, moisture, etc. in the course of time and protected against external factors. Thus, the damping material (8) can be used for a long time without being replaced.
- [0025] In a derivative of this embodiment of the present invention, the carrier (7) comprises at least one hole arranged on at least one surface thereof. In this embodiment, the damping member (9) is placed onto at least one wall (2, 4, 5) such that the surface of the carrier (7) with the hole thereon contacts the side wall (2) and/or rear wall (4) and/or top wall (5) whereon the damping member (9) is to be disposed. By means of said hole, the damping material (8) in the carrier (7) is enabled to contact the wall (2, 4, 5) whereon the damping member (9) is disposed and to efficiently carry out the noise and/or vibration damping function.
- [0026] In an embodiment of the present invention, the damping member (9) comprises a carrier (7) and at least one damping material (8) which is adhered onto at least one surface of the carrier (7) (Figure 3). In this embodiment, by fixing the damping material (8) onto the carrier (7) by being adhered onto at least one surface of the carrier (7), advantage in assembly and labor is ensured. In this embodiment, the damping member (9) is placed onto at least one wall (2, 4, 5) such that the surface of the carrier (7) whereon the damping material (8) is adhered contacts the side wall (2) and/or rear wall (4) and/or top wall (5) whereon the damping member (9) is to be disposed. Thus, the damping material (8) is enabled to contact the wall (2, 4, 5) whereon the damping member (9) is disposed and to efficiently carry out the noise and/or vibration damping function.
- [0027] In an embodiment of the present invention, the damping member (9) comprises a carrier (7) and at least one damping material (8) which is fixed onto the carrier (7) by snap-fitting (Figure 4). By easily fixing the damping material (8) onto the carrier (7) by being snap-fitted onto at least one

surface of the carrier (7), advantage in assembly and labor is ensured. In this embodiment, the damping member (9) is placed onto at least one wall (2, 4, 5) such that the surface of the carrier (7) whereon the damping material (8) is placed contacts the side wall (2) and/or rear wall (4) and/or top wall (5) whereon the damping member (9) is to be disposed. Thus, the damping material (8) is enabled to contact the wall (2, 4, 5) whereon the damping member (9) is disposed and to efficiently carry out the noise and/or vibration damping function.

[0028] In an embodiment of the present invention, the household appliance (1) comprises at least one channel (not shown in figures) which is positioned on at least one of the side walls (2), the rear wall (4) or the top wall (5) and which is configured to receive the damping members (9). In this embodiment, the damping members (9) are inserted into the relevant channel so as to be kept fixed in the channel. Thus, the damping members (9) are prevented from even at least partially moving due to movements caused by the operation of the household appliance (1).

[0029] In an embodiment of the present invention, the household appliance (1) comprises at least two channels (not shown in figures) which are positioned on at least two interconnected walls (2, 4, 5) among the side walls (2), the rear wall (4) or the top wall (5) and which are configured to align with each other at the joint between the walls (2, 4, 5) and to receive the damping members (9). In this embodiment of the present invention, the damping members (9) placed into the channels on a wall (2, 4, 5) for example at the production stage can be moved in the relevant channel due to lack of space at the installation position of the household appliance (1) so as to be transferred into the channel on the other wall (2, 4, 5) with which said channel joins. Thus, the household appliance (1) can be adapted to the installation position.

[0030] In an embodiment of the present invention, the household appliance (1) comprises at least one movement blocking member (not shown in figures) which can be shifted between two positions which are a first position wherein the damping members (9) are allowed to move from the channel on a wall (2, 4, 5) to the channel on the other wall (2, 4, 5) at the point

where the channels on different walls (2, 4, 5) join with each other, and a second position wherein the damping members (9) are prevented from moving from the channel on a wall (2, 4, 5) to the channel on the other wall (2, 4, 5). In this embodiment, the damping members (9) in the channel on a wall (2, 4, 5) are prevented from unintentionally moving in the relevant channel and from entering the channel on another wall (2, 4, 5) with which said channel joins.

- [0031] In an embodiment of the present invention, the household appliance (1) comprises at least one actuation member (not shown in figures) which is in communication with the movement blocking member and which is configured to actuate the movement blocking member at least so as to shift the movement blocking member from the first position to the second position or from the second position to the first position. In this embodiment, when the damping members (9) in the channel on a wall (2, 4, 5) are desired to be moved in the relevant channel to be transferred to the channel on another wall (2, 4, 5) with which said channel joins, the actuation member actuates the movement blocking member so as to shift from the first position to the second position, thus allowing the transfer of the damping member (9) between the two channels.
- [0032] In an embodiment of the present invention, the carrier (7) comprises at least one connection member (not shown in figures). In this embodiment, by interconnecting the connection members on the carriers (7) of at least two damping members (9) joined with each other in the channel, said at least one two damping members (9) are enabled to joined with each other. Thus, when the damping members (9) in the channel on a wall (2, 4, 5) are desired to be moved in the relevant channel so as to be transferred into the channel on another wall (2, 4, 5) with which said channel joins, the damping members (9), which are joined with each other by means of the connection members, are enabled to move in the channel as a whole. Consequently, less effort and time is spent with respect to individually moving each damping member (9).
- [0033] By means of the present invention, vibration and noise generated during the operation of a household appliance (1) such as dishwasher, laundry

washing and/or drying machine, which generates vibration during operation and/or noise due to shakes are enabled to be efficiently damped by means of the damping members (9) which can be repositioned on the body (6) of the household appliance (1). Moreover, by means of the present invention, the household appliance (1) can be used as a standalone or built-in appliance as per user preference without removing any component of the household appliance (1) by means of the damping members (9) which can be repositioned on the body (6).

Claims

1. A household appliance (1) **comprising** a body (6) having at least two opposite side walls (2), a front wall (3) which interconnects the side walls (2) from the ends thereof at the front side, a rear wall (4) which interconnects the side walls (2) from the ends thereof at the rear side and a top wall (5) which interconnects the side walls (2) from the upper ends thereof, **characterized by** a plurality of damping members (9) which are placed onto the side walls (2), the rear wall (4) or the top wall (5) and each having at least one carrier (7) and at least one damping material (8) in communication with the carrier (7) and at least used for damping noise and/or vibrations.
2. A household appliance (1) as in Claim 1, **characterized by** the damping member (9) comprising a carrier (7) having at least one housing therein and at least one damping material (8) which is fixed into said housing.
3. A household appliance (1) as in Claim 2, **characterized by** the carrier (7) comprising at least one hole on at least one surface thereof.
4. A household appliance (1) as in Claim 1, **characterized by** the damping member (9) comprising a carrier (7) and at least one damping material (8) which is adhered onto at least one surface of the carrier (7).
5. A household appliance (1) as in Claim 1, **characterized by** the damping member (9) comprising a carrier (7) and at least one damping material (8) which is fixed onto the carrier (7) by snap-fitting.
6. A household appliance (1) as in any one of the above claims, **characterized by** at least one channel is positioned on at least one of the side walls (2), the rear wall (4) or the top wall (5) and which is configured to receive the damping members (9).
7. A household appliance (1) as in Claim 6, **characterized by** at least two channels which are positioned on at least two interconnected walls (2, 4, 5) among the side walls (2), the rear wall (4) or the top wall (5) and which are configured to align with each other at the joint between the walls (2, 4, 5) and to receive the damping members (9).
8. A household appliance (1) as in Claim 7, **characterized by** at least one movement blocking member which can be shifted between two positions which are a first position wherein the damping members (9) are allowed to move from

the channel on a wall (2, 4, 5) to the channel on the other wall (2, 4, 5) at the point where the channels on different walls (2, 4, 5) join with each other, and a second position wherein the damping members (9) are prevented from moving from the channel on a wall (2, 4, 5) to the channel on the other wall (2, 4, 5).

9. A household appliance (1) as in Claim 8, **characterized by** at least one actuation member which is in communication with the movement blocking member and which is configured to actuate the movement blocking member at least so as to shift the movement blocking member from the first position to the second position or from the second position to the first position.
10. A household appliance (1) as in any one of the above claims, **characterized by** the carrier (7) comprising at least one connection member.

Figure 1

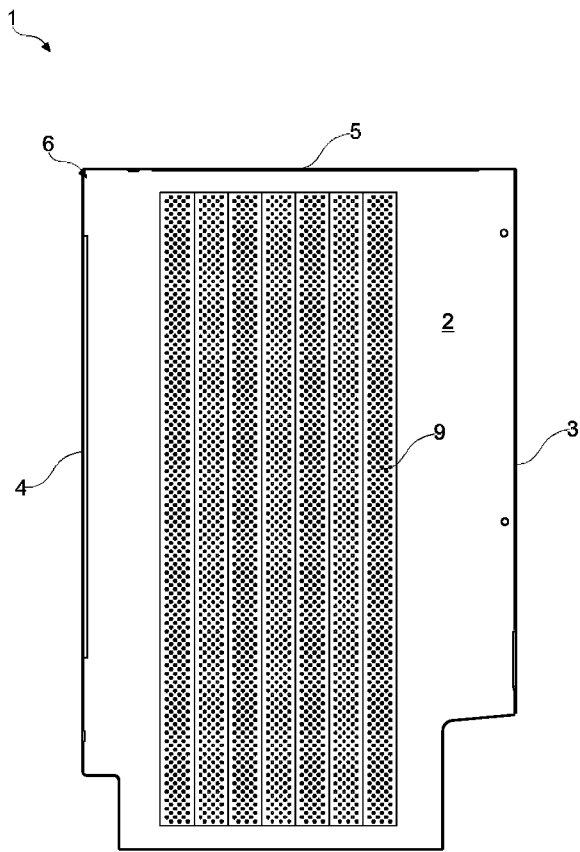


Figure 2

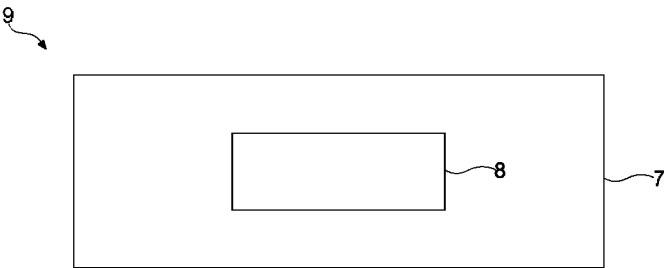


Figure 3

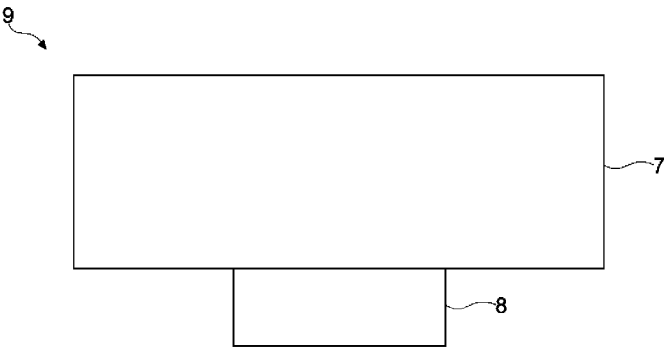
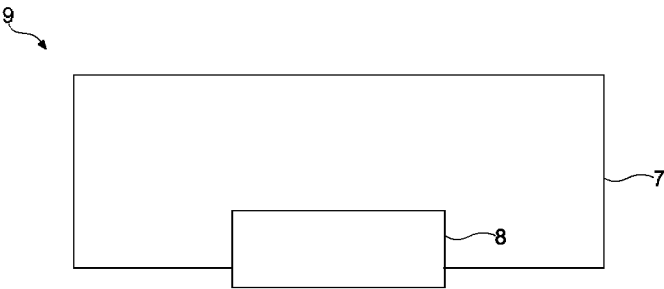


Figure 4



INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2020/050281

A. CLASSIFICATION OF SUBJECT MATTER

INV. D06F39/12 A47L15/42
ADD.

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)

D06F A47L

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.
X	EP 2 792 290 A2 (BSH BOSCH UND SIEMENS HAUSGERÄTE GMBH [DE]) 22 October 2014 (2014-10-22)	1-6,10
A	paragraph [0030] - paragraph [0032] paragraph [0042] - paragraph [0047] paragraph [0058]; claims; figures	7-9
X	DE 10 2008 046837 A1 (LG ELECTRONICS INC [KR]) 23 April 2009 (2009-04-23)	1,6
A	paragraphs [0001], [0012] paragraph [0030] - paragraph [0037]; figures	2-5,7-10
A	DE 10 2016 222829 A1 (BSH HAUSGERÄTE GMBH [DE]) 24 May 2017 (2017-05-24) paragraph [0035] - paragraph [0039]; figures	1-10
	-/--	



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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Tel. (+31-70) 340-2040,
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/050281

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 2 815 688 A1 (WHIRLPOOL CO [US]) 24 December 2014 (2014-12-24) paragraph [0009] - paragraph [0011]; claims; figures -----	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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