

(19)



(11)

**EP 3 510 192 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:

**11.11.2020 Bulletin 2020/46**

(21) Application number: **17761258.7**

(22) Date of filing: **04.09.2017**

(51) Int Cl.:

|                                            |                                             |
|--------------------------------------------|---------------------------------------------|
| <b>D06F 33/47</b> <small>(2020.01)</small> | <b>D06F 34/14</b> <small>(2020.01)</small>  |
| <b>D06F 33/74</b> <small>(2020.01)</small> | <b>D06F 34/04</b> <small>(2020.01)</small>  |
| <b>D06F 34/05</b> <small>(2020.01)</small> | <b>D06F 34/28</b> <small>(2020.01)</small>  |
| <b>D06F 58/50</b> <small>(2020.01)</small> | <b>D06F 103/00</b> <small>(2020.01)</small> |

(86) International application number:

**PCT/EP2017/072055**

(87) International publication number:

**WO 2018/046424 (15.03.2018 Gazette 2018/11)**

(54) **A COMBINATION OF AN EXTERNAL DEVICE AND A LAUNDRY MACHINE**

EINE KOMBINATION AUS EINEM EXTERNEN GERÄT UND EINER WASCHMASCHINE

UNE COMBINAISON D'UN DISPOSITIF EXTERNE ET D'UNE LAVE-LINGE

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB  
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO  
PL PT RO RS SE SI SK SM TR**

(30) Priority: **08.09.2016 CN 201610809566**

(43) Date of publication of application:

**17.07.2019 Bulletin 2019/29**

(73) Proprietor: **BSH Hausgeräte GmbH  
81739 München (DE)**

(72) Inventors:

- **LI, Chao**  
**Nanjing City 210014 (CN)**
- **MU, Jinhong**  
**Nanjing 210096 (CN)**

(56) References cited:

**EP-A1- 2 706 138 DE-A1-102007 038 368**  
**KR-A- 20020 039 960**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

**EP 3 510 192 B1**

## Description

**[0001]** The present disclosure relates to the technical field of laundry machines, and in particular, to a washer, a dryer, and a washing and drying machine.

**[0002]** When a laundry machine breaks down, there arises a need to know why the laundry machine breaks down to correctly maintain the laundry machine, and consequently a test is performed on the laundry machine. A laundry machine with a communication function may communicate with a remote server, and the server may determine why the laundry machine has broken down by testing, so as to provide a corresponding service. However, in this case a high-end laundry machine that is supported with complex software and hardware is needed, thereby increasing a selling price of the laundry machine.

**[0003]** However, a laundry machine without a communication function cannot be connected to the outside for communicating. Currently, there are manufacturers providing a laundry machine on which an interface unit is disposed, by which the laundry machine may be externally connected to a test device. As an alternative a personal computer may be connected to a main controller (for example, a system control microcomputer) of the laundry machine. The system control microcomputer controls a system operation test program of the laundry machine to diagnose, for example, operating state and state of a motor and a load, and learns about working condition information of the laundry machine from the diagnosis result. If there is a fault, the system control microcomputer sends the working condition information of the laundry machine to the test device or the personal computer by using the interface unit, and then forwards the working condition information to a server of a manufacturer. The manufacturer provides a corresponding service according to the obtained information. However, operations of the solution are complex and inconvenient, and the solution has low efficiency. An upgrade may be performed on the laundry machine that does not have a communication module, especially a non-intelligent laundry machine, so as to enable the laundry machine to communicate with a remote server. To achieve the upgrade, software and hardware of the laundry machine need to be reformed, causing a complex process and high costs.

**[0004]** DE 10 2007 038368 A1 relates to a household appliance having a communication unit comprising two portable transmitting and receiving units, wherein the transmitting and receiving unit is attached to a household appliance, wherein the device is formed for data exchange of information between the transmitting and receiving units.

**[0005]** At present, there is still not an effective solution proposed for resolving the problem in the prior art of inconvenience in fault test and external communication for laundry machines that do not have a communication function.

**[0006]** The present disclosure therefore provides a laundry machine, so as to at least resolve the problem

in the prior art of inconvenience in fault test and external communication for laundry machines that do not have a communication function.

**[0007]** To achieve the objective, one aspect of the present disclosure provides a combination of an external device and a laundry machine, in particular a washer, a dryer, a washing or drying machine, according to the independent claim. Preferred facultative embodiments of the inventive laundry machine are defined in respective dependent claims whose features may be combined among themselves for yielding further preferred embodiments, described in the subsequent description or exhibited in the drawing attached.

**[0008]** Accordingly, the laundry machine includes a main controller, a driving controller that controls an operation of operating parts of the laundry machine, and an interface unit that is disposed for exchanging data with an external device. The interface unit is in communication connection with the main controller and the driving controller, separately, an operating instruction sent by the main controller is transmitted to the driving controller by using the interface unit, and the driving controller controls operating of the operating parts according to the operating instruction. The external device includes a test device and a communication device capable of being alternatively connected to the interface unit. When the interface unit is connected to the test device, the test device controls the driving controller to operate by using the interface unit, and obtains and diagnoses working condition information of the driving controller. When the interface unit is connected to the communication device, the communication device establishes a communication connection with the main controller by using the interface unit and sends an external operating instruction to the main controller, so as to control operating of the operating parts by using the main controller. The test device includes a driving program that controls operating of the driving controller and does not need to control operating of the driving controller by using the main controller. The communication device uses the interface unit of the existing laundry machine to establish a connection with the main controller and exchange data with the main controller. The communication device sends a laundry procedure instruction to the main controller of the laundry machine and the main controller performs a corresponding laundry procedure. The fault test and external communication can be implemented simultaneously by using the interface unit without modifying a hardware circuit of the washer or upgrading software of the washer. The interface unit is disposed between the main controller and the driving controller. Even if the main controller breaks down, the external device, such as the test device, can implement a testing function directly by using the interface unit and the driving controller.

**[0009]** Preferably, the operating parts controlled by the driving controller at least include a motor, a door lock, an inlet valve, a drain valve, and a heating module.

**[0010]** Preferably, the working condition information at

least includes operating state and fault information of the laundry machine; and the operating instruction at least includes a laundry procedure and a door lock control instruction.

**[0011]** Preferably, the external device is connected to the interface unit in a wired manner. The test device and the communication device both need to be inserted into the interface unit by using a physical line.

**[0012]** Preferably, the communication device establishes a communication connection with a server in a wired or wireless manner.

**[0013]** Preferably, the communication device is connected to a router by using a Wireless Fidelity (WIFI) or a blue tooth, and the router is in communication connection with the server.

**[0014]** Preferably, the communication device receives an operating instruction sent by the server and sends the operating instruction to the main controller, so as to control the laundry machine to perform a corresponding operation by using the main controller.

**[0015]** Preferably, the communication device recognizes identity information of the laundry machine and provides operating state of the laundry machine to the server in real time. Preferably, the external device includes the test device and the communication device, and the test device provides detected working condition information and/or fault maintenance information to the server for processing by using the communication device. The external device can directly transmit a condition of the tested washer to the server, which is fast, convenient, and of high efficiency.

**[0016]** Preferably, the laundry machine includes a memory that stores data information of the laundry machine and is electrically connected to the main controller; and the communication device reads the data information in the memory or sends the data information to the memory by using the interface unit. Data management of the laundry machine may be implemented by the server by using the memory. When the washer does not communicate with the outside, daily operating information is stored in the memory, so as to transmit the data when the washer communicates with the outside.

**[0017]** Preferably, the communication device transmits the read data information to the server or transmits the data information sent by the server to the memory.

**[0018]** The present disclosure resolves the problem in the prior art of inconvenience in fault test and external communication for laundry machines that do not have a communication function. The external communication function of the washer is implemented by using the interface unit that is developed in the washer for maintenance services by after-sales maintenance staff to connect to the external device having a communication function, so that an effect the same as an intelligent network washer is achieved without modifying the hardware circuit of the washer or upgrading the software of the washer.

**[0019]** The accompanying drawing is referred to herein subsequently. It is intended to provide further understanding of the present disclosure, and is a composition part of this application. The exemplary embodiments of the drawing and the description thereof are intended to further explain the present disclosure, and not to constitute an improper limitation to the present disclosure. In the accompanying drawing:

standing of the present disclosure, and is a composition part of this application. The exemplary embodiments of the drawing and the description thereof are intended to further explain the present disclosure, and not to constitute an improper limitation to the present disclosure. In the accompanying drawing:

FIG. 1 is a schematic diagram of communication between a laundry machine and an external device; and

FIG. 2 is another schematic diagram of communication between a laundry machine and an external device.

**[0020]** The following will refer to the accompanying drawing to describe the present disclosure in detail with reference to preferred embodiments exhibited. It should be noted that when no conflict occurs, embodiments in this application and features in the embodiments can be mutually combined.

**[0021]** The preferred embodiments exhibited provide a laundry machine each. FIG. 1 is a schematic diagram (1) of communication between a laundry machine and an external device. As shown in FIG. 1, a laundry machine 1 includes a main controller 2, a driving controller 3 that controls operating of operating parts of the laundry machine, and an interface unit 4 that is disposed for exchanging data with an external device 5. The interface unit 4 is in communication connection with the main controller 2 and the driving controller 3, separately. An operating instruction sent by the main controller 2 is transmitted to the driving controller 3 by using the interface unit 4, and the driving controller 3 controls operating of the operating parts according to the operating instruction. The operating parts controlled by the driving controller 3 include a motor 11, a door lock 12, an inlet valve 13, a drain valve 14, a heating module 15, and other operating parts (partly shown in the figure).

**[0022]** The external device 5 includes a test device 51 and a communication device 52 capable of being alternatively connected to the interface unit 4. When the interface unit 4 is connected to the test device 51, the test device 51 controls the driving controller 3 to operate by using the interface unit 4, and obtains and diagnoses working condition information of the driving controller 3. The working condition information at least includes operating state and fault information of the laundry machine. The test device 51 includes a driving program that controls operating of the driving controller 3 and does not need to control operating of the driving controller 3 by using the main controller 2.

**[0023]** When the interface unit 4 is connected to the communication device 52, the communication device 52 establishes a communication connection with the main controller 2 by using the interface unit 4 and sends an external operating instruction to the main controller 2, so as to control operating of the operating parts by using

the main controller 2. The operating instruction at least includes a laundry procedure and a door lock control instruction. The communication device 52 uses the interface unit 4 of the existing laundry machine to establish a connection with the main controller 2 and exchange data with the main controller 2. For example, the communication device 52 receives an operating instruction (for example, the laundry procedure) sent by a server 6 and sends the operating instruction to the main controller 2, so as to control the laundry machine 1 to perform a corresponding operation by using the main controller 2. Alternatively, the communication device 52 recognizes identity information of the laundry machine 1 and provides operating state of the laundry machine 1 to the server 6 in real time, so that the server 6 performs real-time monitoring on the laundry machine 1.

**[0024]** Therefore, the fault test and external communication can be implemented simultaneously by using the interface unit 4 of the foregoing laundry machine without modifying a hardware circuit of the washer or upgrading software of the washer. Even if a fault occurs in the main controller, the test device 51 can control the driving controller 3 to operate directly by using the interface unit 4, and detect whether there is a fault in other operating parts without using the main controller 2.

**[0025]** Specifically, the external device 5, whether the test device 51 or the communication device 52, is connected to the interface unit 4 in a wired manner, that is, inserted into the interface unit 4 by using a physical line. The communication device 52 establishes a communication connection with the server 6 in a wired or wireless manner. For example, the communication device 52 is connected to a router (not shown in the figure) by using a Wireless Fidelity (WIFI) or a blue tooth, and the router is in communication connection with the server 6.

**[0026]** In a preferred solution, FIG. 2 is a schematic diagram (2) of communication between a laundry machine and an external device. As shown in FIG. 2, the external device 5 includes the test device 51 and the communication device 52, and the test device 51 provides detected working condition information and/or fault maintenance information to the server 6 for processing by using the communication device 52.

**[0027]** In this case, the time for fault test and maintenance is saved, and the solution is fast, convenient, and is of high efficiency.

**[0028]** Preferably, the laundry machine 1 includes a memory 7 that stores data information of the laundry machine and is electrically connected to the main controller 2; and the communication device 52 reads the data information in the memory 7 or sends the data information to the memory 7 by using the interface unit 4. Data management of the laundry machine 1 may be implemented by the server 6 by using the memory. When the washer does not communicate with the outside, daily operating information is stored in the memory 7, so as to transmit the data when the washer communicates with the outside. Specifically, the communication device 52 transmits

the read data information to the server 6 or transmits the data information sent by the server 6 to the memory 7.

**[0029]** The present disclosure resolves the problem in the prior art of inconvenience in fault test and external communication for laundry machines that do not have a communication function. The external communication function of the washer is implemented by using the interface unit that is developed in the washer for maintenance services by after-sales maintenance staff to connect to the external device having a communication function, so that an effect the same as an intelligent network washer is achieved without modifying the hardware circuit of the washer or upgrading the software of the washer.

## Claims

1. A combination of an external device (5) and a laundry machine (1),  
the laundry machine (5) comprising a main controller (2), a driving controller (3) that controls an operation of operating parts of the laundry machine, and an interface unit (4) that is disposed for exchanging data with the external device (5), **characterized in that:**

the interface unit (4) is in communication connection with the main controller (2) and the driving controller (3), separately; an operating instruction sent by the main controller (2) is transmitted to the driving controller (3) by using the interface unit (4); and the driving controller (3) controls operating of the operating parts according to the operating instruction, wherein the external device (5) comprises a test device (51) and a communication device (52) capable of being alternatively connected to the interface unit (4);

when the interface unit (4) is connected to the test device (51), the test device (51) controls the driving controller (3) to operate by using the interface unit (4), and obtains and diagnoses working condition information of the driving controller (3); and

when the interface unit (4) is connected to the communication device (52), the communication device (52) establishes a communication connection with the main controller (2) by using the interface unit (4) and sends an external operating instruction to the main controller (2), so as to control operating of the operating parts by using the main controller (2).

2. The combination according to claim 1, **characterized in that:**

the operating parts controlled by the driving controller (3) at least comprise a motor (11), a door lock (12), an inlet valve (13), a drain valve (14), and a heating module (15) of the laundry machine.

3. The combination according to claim 1, **characterized in that:**  
the working condition information at least comprises operating state and fault information of the laundry machine; and the operating instruction at least comprises a laundry procedure and a door lock control instruction. 5
4. The combination according to claim 1, **characterized in that:**  
the external device (5) is connected to the interface unit (4) in a wired manner. 10
5. The combination according to claim 4, **characterized in that:**  
the communication device (52) establishes a communication connection with a server (6) in a wired or wireless manner. 15
6. The combination according to claim 5, **characterized in that:**  
the communication device (52) is connected to a router by using a Wireless Fidelity (WIFI) or a Bluetooth network, and the router is in communication connection with the server (6). 20 25
7. The combination according to claim 5, **characterized in that:**  
the communication device (52) receives an operating instruction sent by the server (6) and sends the operating instruction to the main controller (2), so as to control the laundry machine (1) to perform a corresponding operation by using the main controller (2). 30 35
8. The combination according to claim 5, **characterized in that:**  
the communication device (52) recognizes identity information of the laundry machine (1) and provides operating state of the laundry machine (1) to the server (6) in real time. 40
9. The combination according to claim 5, **characterized in that:**  
the external device (5) comprises the test device (51) and the communication device (52), and the test device (51) provides detected working condition information and/or fault maintenance information to the server (6) for processing by using the communication device (52). 45 50
10. The combination according to claim 5, **characterized in that:**  
the laundry machine (1) comprises a memory (7) that stores data information of the laundry machine and is electrically connected to the main controller (2); and 55

the communication device (52) reads the data information in the memory (7) or sends the data information to the memory (7) by using the interface unit (4).

11. The combination according to claim 10, **characterized in that:**  
the communication device (52) transmits the read data information to the server (6) or transmits the data information sent by the server (6) to the memory (7).

#### Patentansprüche

1. Kombination aus einem externen Gerät (5) und einer Wäschepflegemaschine (1), wobei die Wäschepflegemaschine (5) eine Hauptsteuerung (2), eine Antriebssteuerung (3), die einen Betrieb von Betriebsteilen der Wäschepflegemaschine steuert, und eine Schnittstelleneinheit (4) umfasst, die zum Austauschen von Daten mit dem externen Gerät (5) angeordnet ist, **dadurch gekennzeichnet, dass:**

die Schnittstelleneinheit (4) jeweils eine separate Kommunikationsverbindung zu der Hauptsteuerung (2) und der Antriebssteuerung (3) besitzt, wobei eine von der Hauptsteuerung (2) gesendete Betriebsanweisung unter Verwendung der Schnittstelleneinheit (4) an die Antriebssteuerung (3) übermittelt wird und die Antriebssteuerung (3) den Betrieb der Betriebsteile der Betriebsanweisung entsprechend steuert, wobei das externe Gerät (5) ein Prüfgerät (51) und ein Kommunikationsgerät (52) umfasst, die sich abwechselnd mit der Schnittstelleneinheit (4) verbinden lassen, das Prüfgerät (51), wenn die Schnittstelleneinheit (4) damit verbunden ist, die Antriebssteuerung (3) unter Verwendung der Schnittstelleneinheit (4) mittels Ansteuerung in Betrieb setzt und Arbeitsbedingungeninformationen zur Antriebssteuerung (3) gewinnt und diagnostiziert und das Kommunikationsgerät (52), wenn die Schnittstelleneinheit (4) damit verbunden ist, unter Verwendung der Schnittstelleneinheit (4) eine Kommunikationsverbindung zur Hauptsteuerung (2) herstellt und eine externe Betriebsanweisung zur Hauptsteuerung (2) sendet und so den Betrieb der Betriebsteile unter Verwendung der Hauptsteuerung (2) steuert.

2. Kombination nach Anspruch 1, **dadurch gekennzeichnet, dass:**  
die von der Antriebssteuerung (3) gesteuerten Betriebsteile zumindest einen Motor (11), eine Türverriegelung (12), ein Einlassventil (13), ein Ablassven-

til (14) und ein Heizmodul (15) der Wäschepflegemaschine umfassen.

3. Kombination nach Anspruch 1, **dadurch gekennzeichnet, dass:**

die Arbeitsbedingungsinformationen zumindest Betriebszustands- und Fehlerinformationen zur Wäschepflegemaschine umfassen und die Betriebsanweisung zumindest eine Wäschevorgangs- und eine Türverriegelungssteueranweisung umfasst.

4. Kombination nach Anspruch 1, **dadurch gekennzeichnet, dass:**

das externe Gerät (5) drahtgebunden mit der Schnittstelleneinheit (4) verbunden ist.

5. Kombination nach Anspruch 4, **dadurch gekennzeichnet, dass:**

das Kommunikationsgerät (52) drahtgebunden oder drahtlos eine Kommunikationsverbindung zu einem Server (6) herstellt.

6. Kombination nach Anspruch 5, **dadurch gekennzeichnet, dass:**

das Kommunikationsgerät (52) unter Verwendung eines WLAN- (Wireless Local Area Network) oder eines Bluetooth-Netzwerks mit einem Router verbunden ist und der Router eine Kommunikationsverbindung zum Server (6) besitzt.

7. Kombination nach Anspruch 5, **dadurch gekennzeichnet, dass:**

das Kommunikationsgerät (52) eine von dem Server (6) gesendete Betriebsanweisung empfängt und diese zur Hauptsteuerung (2) sendet und so die Wäschepflegemaschine (1) unter Verwendung der Hauptsteuerung (2) so steuert, dass sie eine entsprechende Operation durchführt.

8. Kombination nach Anspruch 5, **dadurch gekennzeichnet, dass:**

das Kommunikationsgerät (52) Identitätsinformationen zur Wäschepflegemaschine (1) erkennt und in Echtzeit einen Betriebszustand der Wäschepflegemaschine (1) an den Server (6) meldet.

9. Kombination nach Anspruch 5, **dadurch gekennzeichnet, dass:**

das externe Gerät (5) das Prüfgerät (51) und das Kommunikationsgerät (52) umfasst und das Prüfgerät (51) unter Verwendung des Kommunikationsgeräts (52) erfasste Arbeitsbedingungsinformationen und/oder Fehlerbehebungsinformationen zur Verarbeitung an den Server (6) meldet.

10. Kombination nach Anspruch 5, **dadurch gekennzeichnet,**

**zeichnet, dass:**

die Wäschepflegemaschine (1) einen Speicher (7) umfasst, der Dateninformationen zur Wäschepflegemaschine speichert und elektrisch mit der Hauptsteuerung (2) verbunden ist, und das Kommunikationsgerät (52) unter Verwendung der Schnittstelleneinheit (4) die Dateninformationen in dem Speicher (7) liest oder sie zum Speicher (7) sendet.

11. Kombination nach Anspruch 10, **dadurch gekennzeichnet, dass:**

das Kommunikationsgerät (52) die gelesenen Dateninformationen an den Server (6) oder die von dem Server (6) gesendeten Dateninformationen an den Speicher (7) übermittelt.

## Revendications

1. Combinaison d'un dispositif externe (5) et d'un lave-linge (1), le lave-linge (5) comprenant un contrôleur principal (2), un contrôleur d'entraînement (3) qui commande un fonctionnement des éléments fonctionnels du lave-linge, et une unité d'interface (4) qui est disposée pour échanger des données avec le dispositif externe (5), **caractérisée en ce que :**

l'unité d'interface (4) est en liaison de communication avec le contrôleur principal (2) et le contrôleur d'entraînement (3), séparément ; une instruction de commande envoyée par le contrôleur principal (2) est transmise au contrôleur d'entraînement (3) en utilisant l'unité d'interface (4) ; et le contrôleur d'entraînement (3) commande le fonctionnement des éléments fonctionnels selon l'instruction de commande, dans lequel le dispositif externe (5) comprend un dispositif de test (51) et un dispositif de communication (52) pouvant être reliés alternativement à l'unité d'interface (4) ;

lorsque l'unité d'interface (4) est reliée au dispositif de test (51), le dispositif de test (51) commande le contrôleur d'entraînement (3) pour fonctionner en utilisant l'unité d'interface (4), et obtient et diagnostique des informations d'état de marche du contrôleur d'entraînement (3) ; et lorsque l'unité d'interface (4) est reliée au dispositif de communication (52), le dispositif de communication (52) établit une connexion de communication avec le contrôleur principal (2) en utilisant l'unité d'interface (4) et envoie une instruction de commande externe au contrôleur principal (2), de manière à commander le fonctionnement des éléments fonctionnels en utilisant le contrôleur principal (2).

2. Combinaison selon la revendication 1, **caractérisée en ce que :**

les éléments fonctionnels commandés par le contrôleur d'entraînement (3) comprennent au moins un moteur (11), un verrouillage de porte (12), une vanne d'arrivée (13), une vanne de vidange (14), et un module de chauffage (15) du lave-linge.

**3. Combinaison selon la revendication 1, caractérisée en ce que :**

les informations d'état de marche comprennent au moins des informations d'état de marche et de défaut du lave-linge ; et l'instruction de commande comprend au moins une procédure de lavage et une instruction de commande de verrouillage de porte.

**4. Combinaison selon la revendication 1, caractérisée en ce que :**

le dispositif externe (5) est relié à l'unité d'interface (4) d'une manière filaire.

**5. Combinaison selon la revendication 4, caractérisée en ce que :**

le dispositif de communication (52) établit une connexion de communication avec un serveur (6) d'une manière filaire ou sans fil.

**6. Combinaison selon la revendication 5, caractérisée en ce que :**

le dispositif de communication (52) est relié à un routeur en utilisant un réseau de fidélité sans fil (WIFI) ou un réseau Bluetooth, et le routeur est en liaison de communication avec le serveur (6).

**7. Combinaison selon la revendication 5, caractérisée en ce que :**

le dispositif de communication (52) reçoit une instruction de commande envoyée par le serveur (6) et envoie l'instruction de commande au contrôleur principal (2), de manière à commander le lave-linge (1) pour effectuer une opération correspondante en utilisant le contrôleur principal (2).

**8. Combinaison selon la revendication 5, caractérisée en ce que :**

le dispositif de communication (52) reconnaît des informations d'identité du lave-linge (1) et fournit l'état de marche du lave-linge (1) au serveur (6) en temps réel.

**9. Combinaison selon la revendication 5, caractérisée en ce que :**

le dispositif externe (5) comprend le dispositif de test (51) et le dispositif de communication (52), et le dispositif de test (51) fournit des informations d'état de marche détecté et/ou des informations de maintenance corrective au serveur (6) pour traitement en utilisant le dispositif de communication (52).

**10. Combinaison selon la revendication 5, caractérisée**

**en ce que :**

le lave-linge (1) comprend une mémoire (7) qui stocke des informations de données du lave-linge et est reliée électriquement au contrôleur principal (2) ; et le dispositif de communication (52) lit les informations de données dans la mémoire (7) ou envoie les informations de données à la mémoire (7) en utilisant l'unité d'interface (4).

**11. Combinaison selon la revendication 10, caractérisée en ce que :**

le dispositif de communication (52) transmet les informations de données lues au serveur (6) ou transmet les informations de données envoyées par le serveur (6) à la mémoire (7).

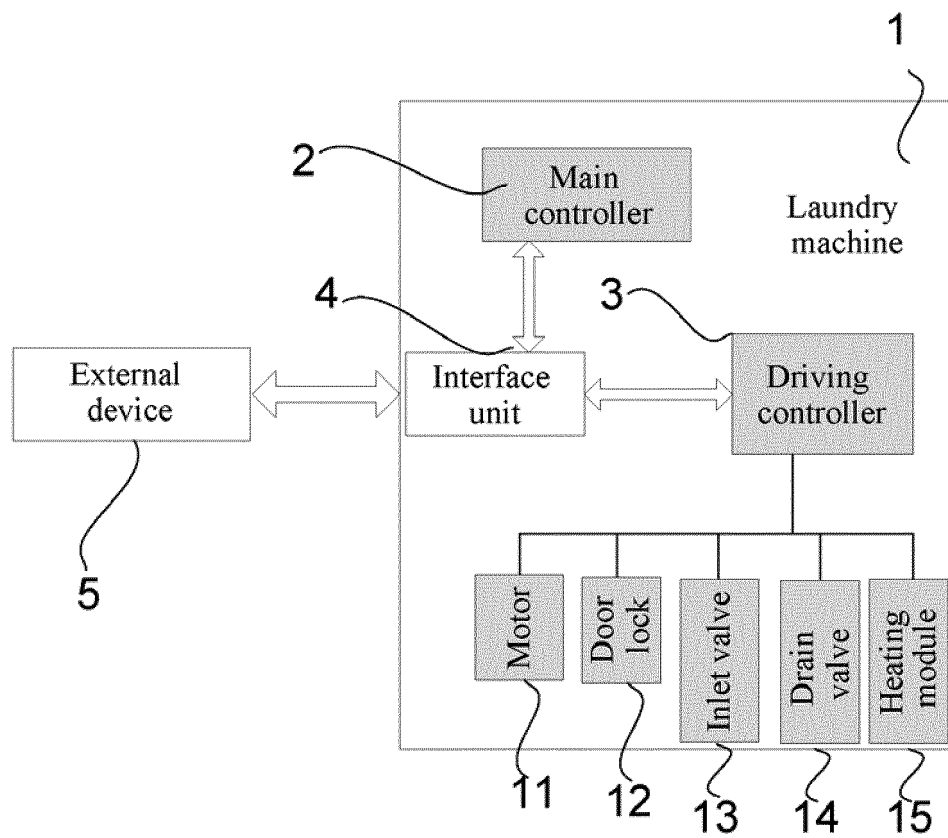


FIG. 1



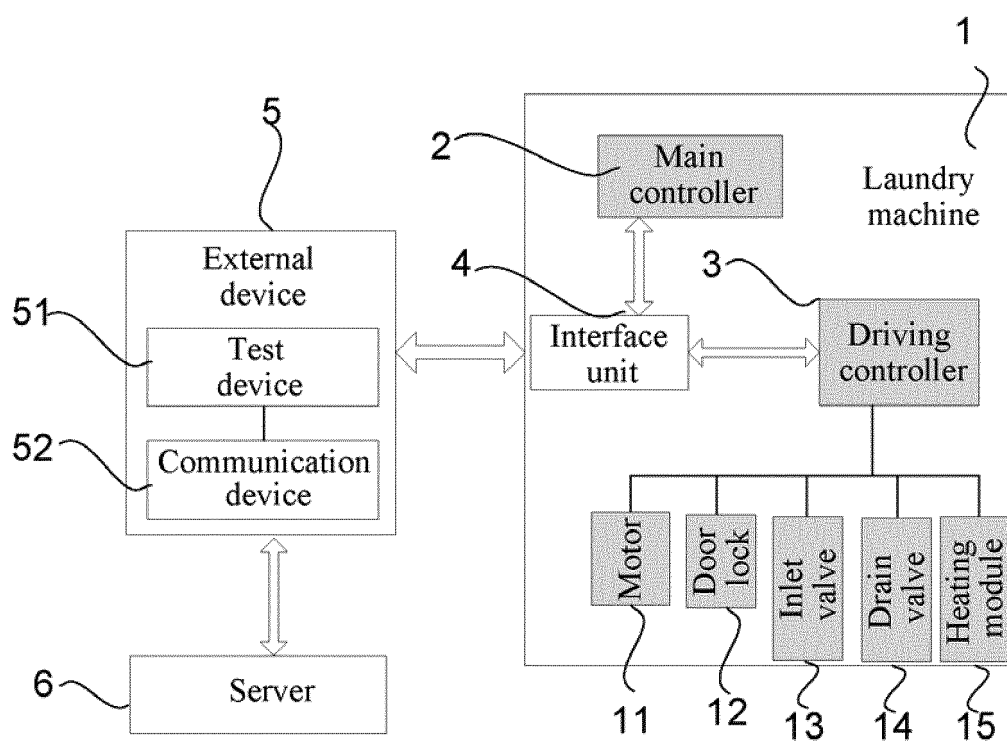


FIG. 2

**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- DE 102007038368 A1 **[0004]**