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(54) **IMPROVED CONNECTION SYSTEM FOR HOUSEHOLD APPLIANCES AND INSTALLATION PROCESS FOR SUCH SYSTEM**

(57) An improved connection system (1) for a column of household appliances is described, in particular for the superposition of at least one washing machine (3) and at least one clothes dryer (5), comprising a connection element (7) interposed between said household appliances and a plurality of fastening elements (9, 19) configured to connect the connecting element (7) to the household appliances (3, 5), the connecting element (7) comprising at least two sides (41) corresponding to the lateral sides (11) of the household appliances (3, 5) and configured to connect to the lateral sides (11) of at least one appliance (3).

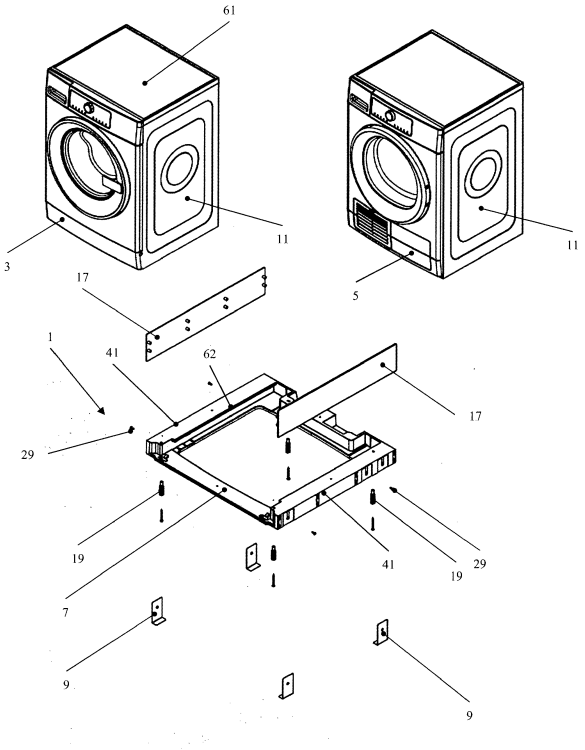

FIG. 1

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Description

[0001] The present invention relates to an improved connection system for the column of household appliances, in particular for laundry in the column. The present invention also refers to a process for installing such system.

[0002] Elements and joining systems for laundry in a column are known in the art, by means of which it is possible to overlap the dryer and the washing machine allowing a significant saving of space.

[0003] Known connecting elements, however, suffer from some drawbacks, in particular due to the fact that, very often, the connecting elements do not allow guaranteeing an appreciable stability of the laundry column, requiring at least the appliance to be fixed to the wall by means of dowels, usually the dryer, placed higher up.

[0004] Object of the present invention is solving the aforesaid prior art problems by providing an improved connection system for the column of household appliances, in particular for laundry in the column, which allows guaranteeing an appreciable stability of the laundry column and obtaining greater stability on the support feet of washing machines and tumble dryers, in particular of the appliance which is located in the lower position of the column, increasing its safety of use.

[0005] Another object of the present invention is providing a process for installing an improved connection system for a column of household appliances.

[0006] The aforesaid and other objects and advantages of the invention, as will appear from the following description, are achieved with an improved connection system for a column of household appliances, in particular for laundry in a column, and with a process for installing an improved connection system such as those described in the main claims. Preferred embodiments and non-trivial variants of the present invention form the subject of the dependent claims.

[0007] It is understood that the attached claims form an integral part of the present description.

[0008] It will be immediately obvious that innumerable variations and modifications (for example relating to shape, dimensions, arrangements and parts with equivalent functionality) can be made to what has been described without departing from the scope of the invention as appears from the attached claims.

[0009] The present invention will be better described by a preferred embodiment thereof, provided as a non-limiting example, with reference to the attached drawings, in which:

- Figure 1 shows an exploded view of an improved connection system for a column of household appliances according to the invention;
- Figure 2 shows views of anti-overturning feet of the improved connection system for column of household appliances according to the invention and
- Figures 3 to 6 show perspective views of the improved connection system for column of household appliances according to the invention.

[0010] With reference to the Figures, a preferred embodiment of the improved connection system 1 for the column of household appliances according to the present invention is shown and described, in particular for a laundry in the column, and therefore intended to allow the superposition of at least one washing machine 3 and at least one clothes dryer 5, said improved connection system 1 comprising a connection element 7, substantially in the form of a frame, interposed between these household appliances, and in particular a household appliance arranged on the ground 3, for example the washing machine 3 and a supported household appliance 5, for example the dryer 5, and a plurality of fastening elements 9, 19 configured to connect the connecting element 7 to such household appliances, preferably such a washing machine 3 and/or such a dryer 5.

[0011] In the following, for the sake of simplicity, reference will be made to the washing machine 3 and the dryer 5 as examples of such household appliances arranged on the ground and supported by the connecting element 7, without therefore being in any way limiting the fields of application of the present invention.

[0012] Referring in particular to the Figures, it can be noted that the connecting element 7, substantially in the form of a frame, is preferably made of a plastic material suitable for such purpose, and possibly reinforced by a reticular structure of ribs 16, and comprises two sides 41 corresponding to the lateral sides 11 of the washing machine 3 and the dryer 5 and configured to connect to the lateral sides 11 of at least one household appliance 3, preferably of the washing machine 3. In addition, to increase the contact adhesion between the connecting element 7 and the interface surfaces of the household appliances 3, 5, the connecting element 7 can comprise a plurality of support plates 21, each of which made of plastic material, and coupled to at least one layer 51 of a non-slip or adhesive material, for example made of elastomeric material.

[0013] With reference to the Figures, the two sides 41 of the joining element corresponding to the lateral sides 11 of the washing machine 3 and the dryer 5, can be connected, by means of a plurality of first fastening elements 9, to the lateral sides 11 of the appliance placed on the ground, for example of the washing machine 3, so as to increase the stability of the column formed by overlapping the household appliances and the connecting element 7, and in particular by overlapping the washing machine 3, the connecting element 7 and the laundry dryer 5.

[0014] Preferably, the connecting element 7 is connected to the washing machine 3 and configured to support the dryer 5 connected thereto.

[0015] In a preferred embodiment of the invention, the connecting element 7 is fixed to the clothes dryer 5 through a plurality of second fastening elements 19.

[0016] Preferably, said first fastening elements 9 comprise a plurality of steel brackets 9 configured to be fixed to the washing machine 3 by inserting them into suitable grooves 12 arranged in correspondence with the lateral sides 11 of the washing machine 3, preferably said brackets 9 being inserted between a upper surface 61 of the washing machine 3 and the supporting body of the washing machine 3 in correspondence with the lateral sides 11, and the brackets 9 being fixed to the sides 41 of the connecting element 7 by means of self-tapping screws 29.

[0017] Preferably, said second fastening elements 19 comprise a plurality of expandable plugs 19, configured to be inserted inside the feet 15 of the dryer 5 and fixed to the connecting element 7, by means of self-tapping screws screwed into the plugs 19.

[0018] Preferably, the washing machine 3 is connected to at least two anti-tip feet 31, for example made of plastic material, for feet 35 of the washing machine 3, each anti-tip foot 31 comprising a seat 32 configured to house the base of the foot 35 of the washing machine 3 and any accessories (nuts, springs etc.), and a through-hole 36 configured for the insertion of a pin 37 of said foot 35 of the washing machine 3, so as to connect each anti-tipping foot 31 to a respective foot 35 of the washing machine 3 in turn configured to be fixed to the washing machine 3, in particular by screwing the threaded pin 37 into a suitable seat of the feet, obtained on the base of the washing machine 3 and in a locking nut 39.

[0019] Preferably, the improved joining system 1 comprises, along at least the two sides 41 of the joining element 7 corresponding to the lateral sides 11 of the household appliances 3, 5, respective finishing bulkheads 17 which can be connected with plastic buttons integral to the joining element 7.

[0020] Preferably, the improved connection system 1 is equipped with at least one extractable sliding surface inside the connection element 7 along special sliding guides 62, useful as a support in the operations of loading and unloading the laundry.

[0021] The present invention also relates to an installation process of the improved joining system 1 such as that described above. With reference to the Figures, it can be noted that the process according to the present invention comprises the following steps:

- a step of inserting the second fastening elements 19 into the feet 15 of the dryer 5;
- a phase of positioning the dryer 5 on the connecting element 7;
- a step of fixing the connecting element 7 to the dryer 5, by screwing self-tapping screws into the second fastening elements 19;
- a step of inserting the first fastening elements 9 into the appropriate grooves 12 arranged in the lateral sides 11 of the washing machine 3;
- a step of inserting the connecting element 7 and the dryer 5 connected thereto between the first fastening elements 9 of said connecting element 7 to fix the connecting element 7 to said first fastening elements 9 by screwing self-tapping screws 29 in the first fastening elements 9 and in the connecting element 7.

[0022] To fix the anti-tip feet 31, the following steps are also envisaged:

- a step of removing the feet 35 of the washing machine 3;
- a step of inserting each foot 35 of the washing machine into an anti-overturning foot 31, inserting the pin 37 in the through hole 36 and, preferably, fixing said foot 35 of the washing machine to said anti-overturning foot 31 by screwing the locking nut 39 in the threaded pin 37;
- a step of inserting the feet 35 of the washing machine with anti-overturning feet 31 integrated in the washing machine 3, for example by screwing said feet 35 into suitable seats.

[0023] Advantageously, the improved connection system for the column of household appliances and the installation process of this system of the invention allow guaranteeing an appreciable stability of the laundry column and obtaining greater stability on the support feet of washing machines and dryers, in particular of the appliance located in the lower position of the column, increasing its safety of use.

Claims

1. Improved connection system (1) for a column of household appliances, in particular for a superposition of at least one washing machine (3) and at least one tumble dryer (5), comprising a connecting element (7) interposed between said household appliances and a plurality of fixing elements (9, 19) configured to connect the connecting element (7) to said household appliances (3, 5), said connecting element (7) comprising at least two sides (41) corresponding to lateral sides (11) of household appliances (3, 5) and configured to connect to lateral sides (11) of at least one household appliance (3), the connecting element (7) being fixed to the supported household appliance (5) by means of a plurality of second fixing elements (19), said second fixing elements comprising a plurality of expandable plugs (19), configured to be inserted inside the feet (15) of the supported household appliance (5) and fixed to the connecting element (7).

2. Improved connection system (1) for a column of household appliances according to claim 1, **characterized in that** the connection element (7) is connected through said plurality of first fastening elements (9) to the household appliance (3) arranged

grounded and is configured to support the other household appliance (5) or connected to said connecting element (7).

3. Improved joint system (1) for a column of household appliances according to any one of the preceding claims, **characterized in that** said first fixing elements comprise a plurality of brackets (9) configured to be fixed to the household appliance (3) arranged on the ground by inserting them into special grooves (12) arranged in correspondence with its lateral sides (11), the brackets (9) being inserted between an upper surface (61) of the washing machine (3) and the supporting body of the washing machine (3) in correspondence with the lateral sides (11).

4. Improved connection system (1) for a column of household appliances according to any one of the preceding claims, **characterized in that** the household appliance (3) arranged on the ground is connected to at least two anti-tipping feet (31), each anti-tipping foot (31) comprising a seat (32) configured to house the base of a foot (35) of the household appliance (3) arranged on the ground and a through-hole (36) configured for the insertion of a pin (37) of said foot (35).

5. Improved joining system (1) for a column of household appliances according to any one of the preceding claims, **characterized in that** the joining element (7) comprises a plurality of support plates (21), each of which is made of plastic material, and coupled to at least one layer (51) of an anti-slip material to increase the contact adhesion between the connecting element (7) and the interface surfaces of the household appliances (3, 5) .

6. Process for installing an improved joining system (1) according to any one of the preceding claims, **characterized in that** it comprises the following steps:

- a step of inserting the second fastening elements (19) into the feet (15) of the supported appliance (5);
- a phase of positioning the appliance supported (5) on the connecting element (7);
- a phase of fixing the connecting element (7) to the supported appliance (5);
- a phase of inserting the first fastening elements (9) in the appropriate grooves (12) arranged in the lateral sides (11) of the appliance (3) placed on the ground;
- a step of inserting the connecting element (7) and the supported household appliance (5) connected thereto, between the first fastening elements (9) to fix the connecting element (7) to said first fastening elements (9).

7. Process for installing an improved connection system (1) according to claim 6, **characterized in that** the following steps are also envisaged for fixing the anti-tip feet (31):

- a step of removing the feet (35) of the appliance (3) placed on the ground;
- a step of inserting each foot (35) of the appliance (3) placed on the ground in an anti-overturning foot (31), inserting the pin (37) in the through hole (36);
- a phase of inserting the feet (35) into the appliance (3) placed on the ground with integrated anti-tip feet (31).

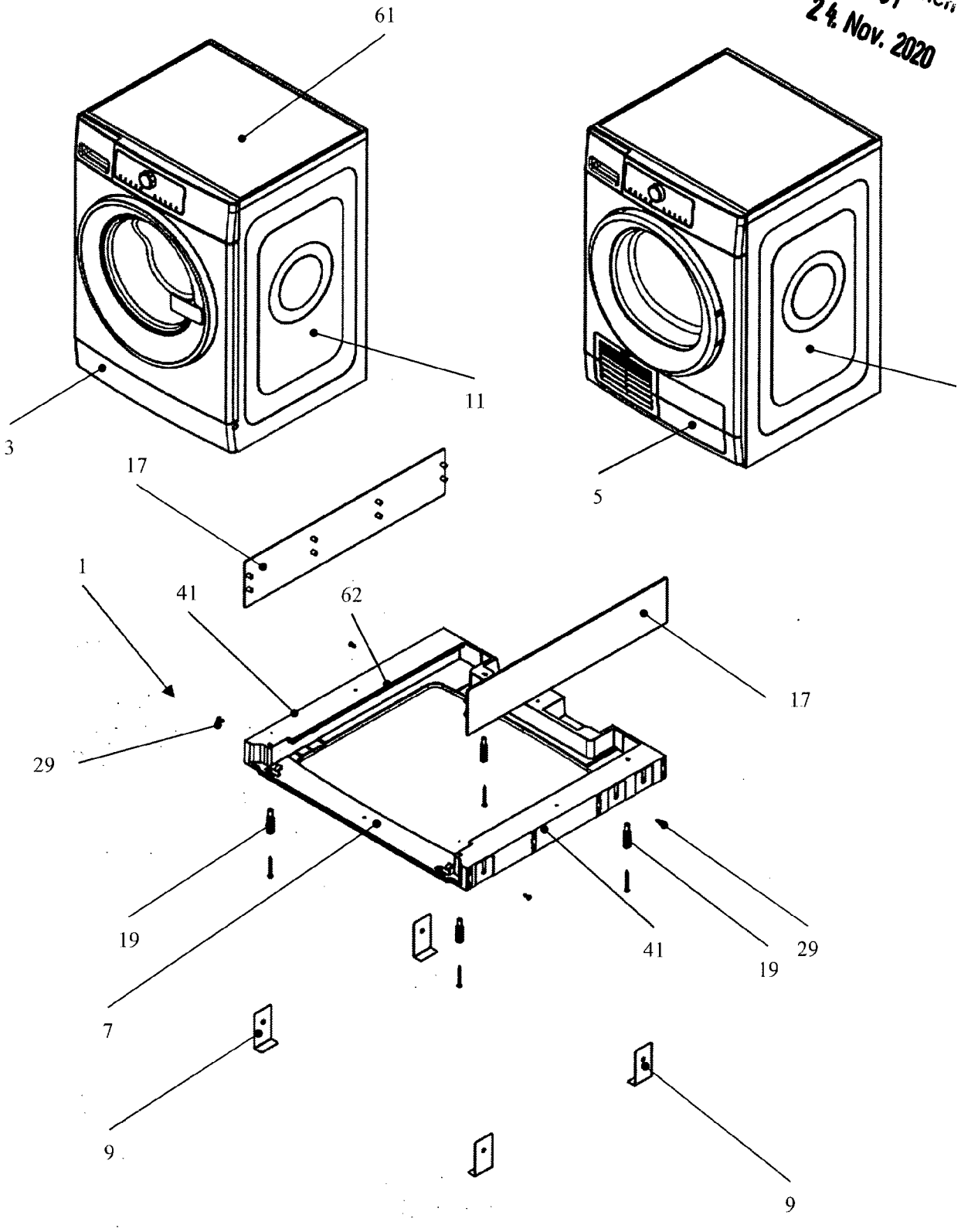

FIG. 1

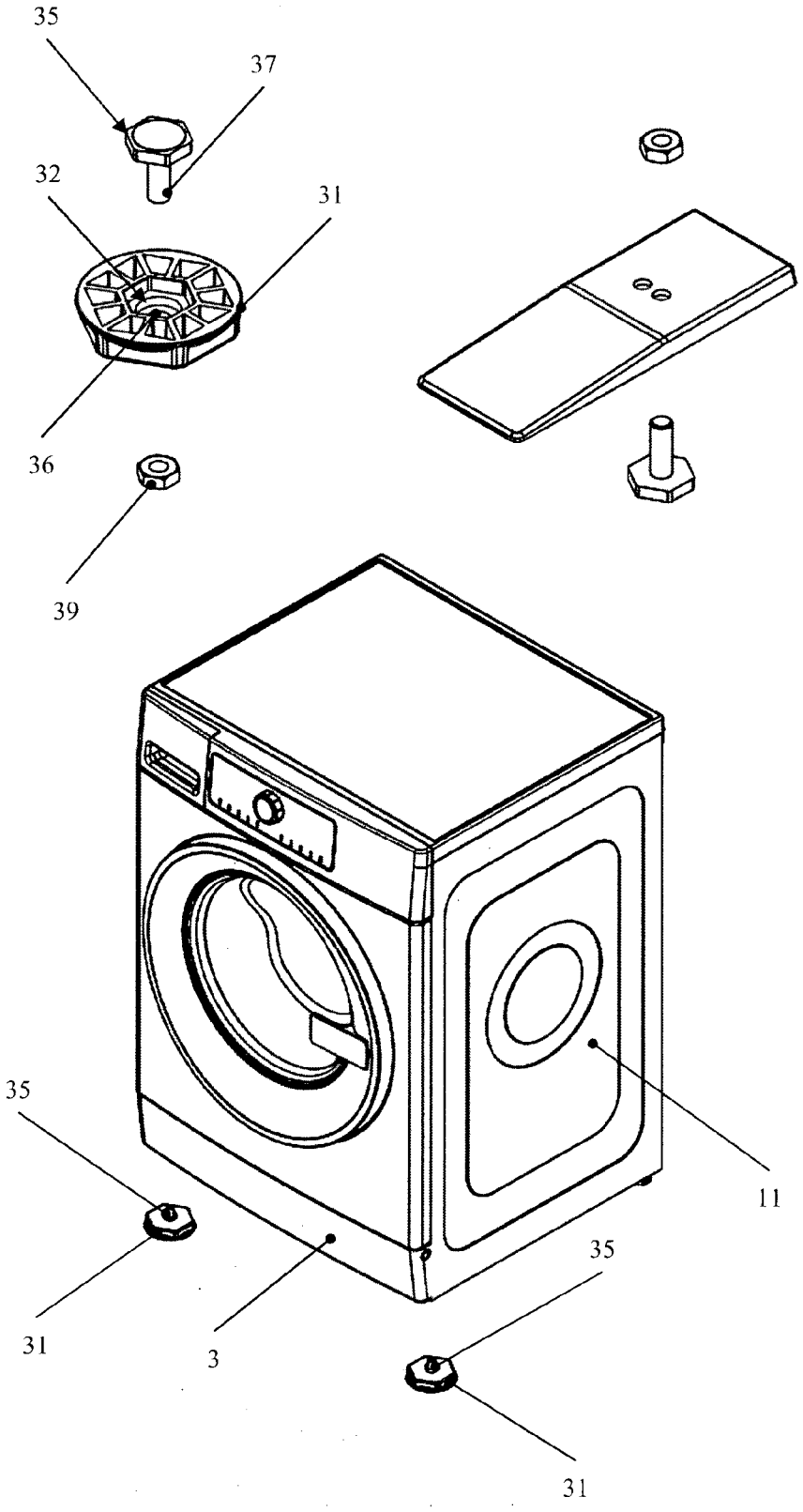

FIG. 2

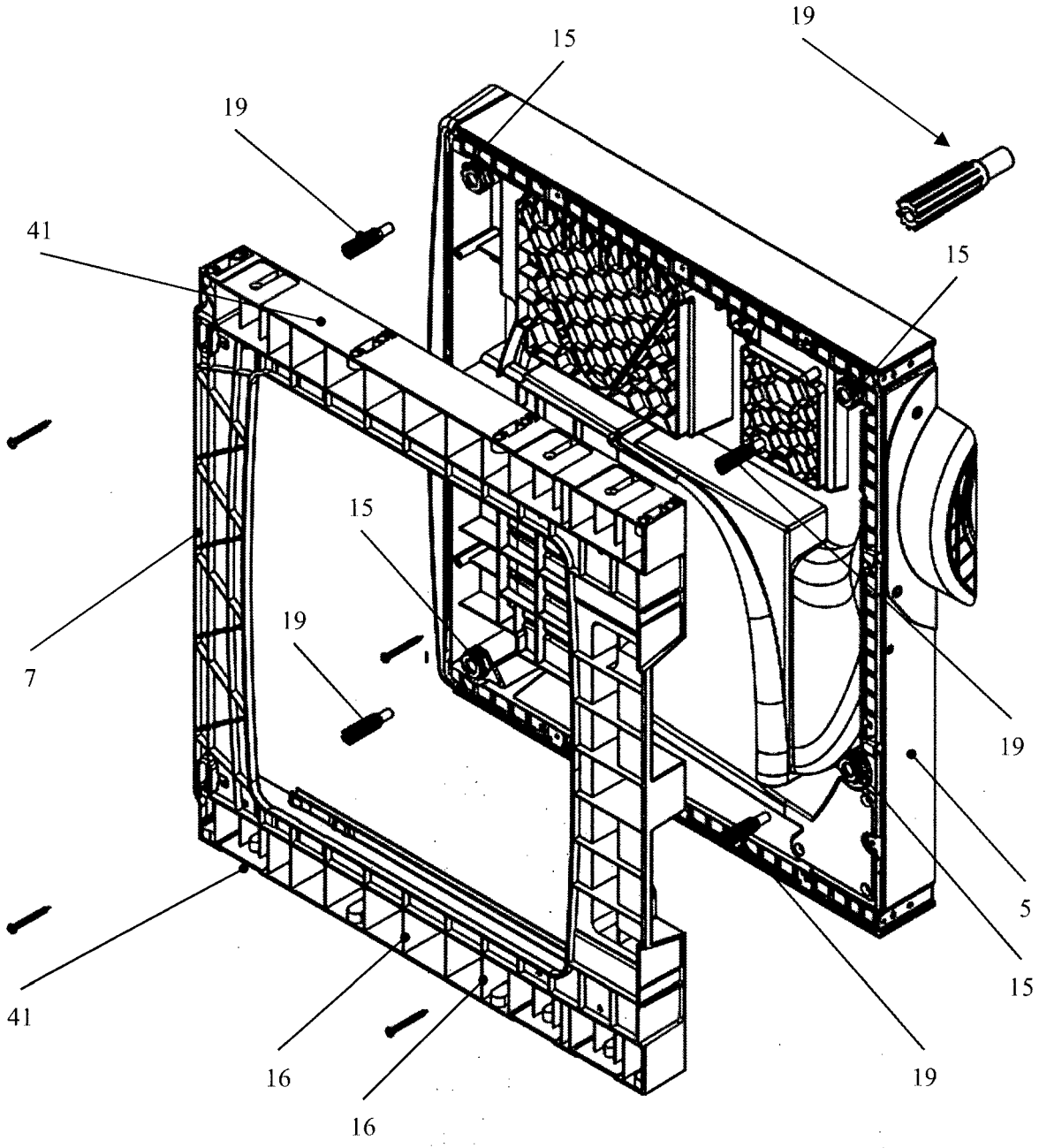

FIG. 3

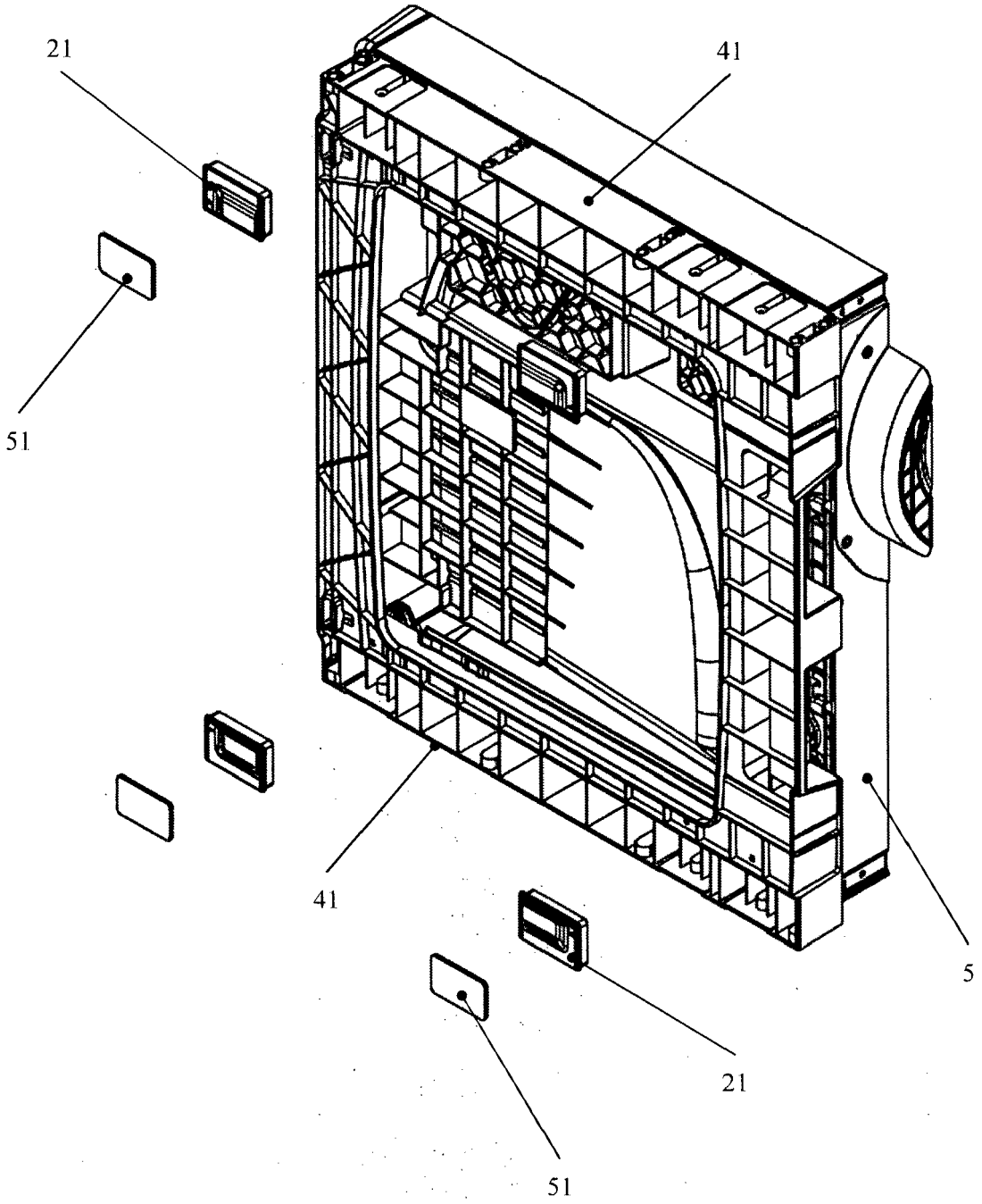

FIG. 4

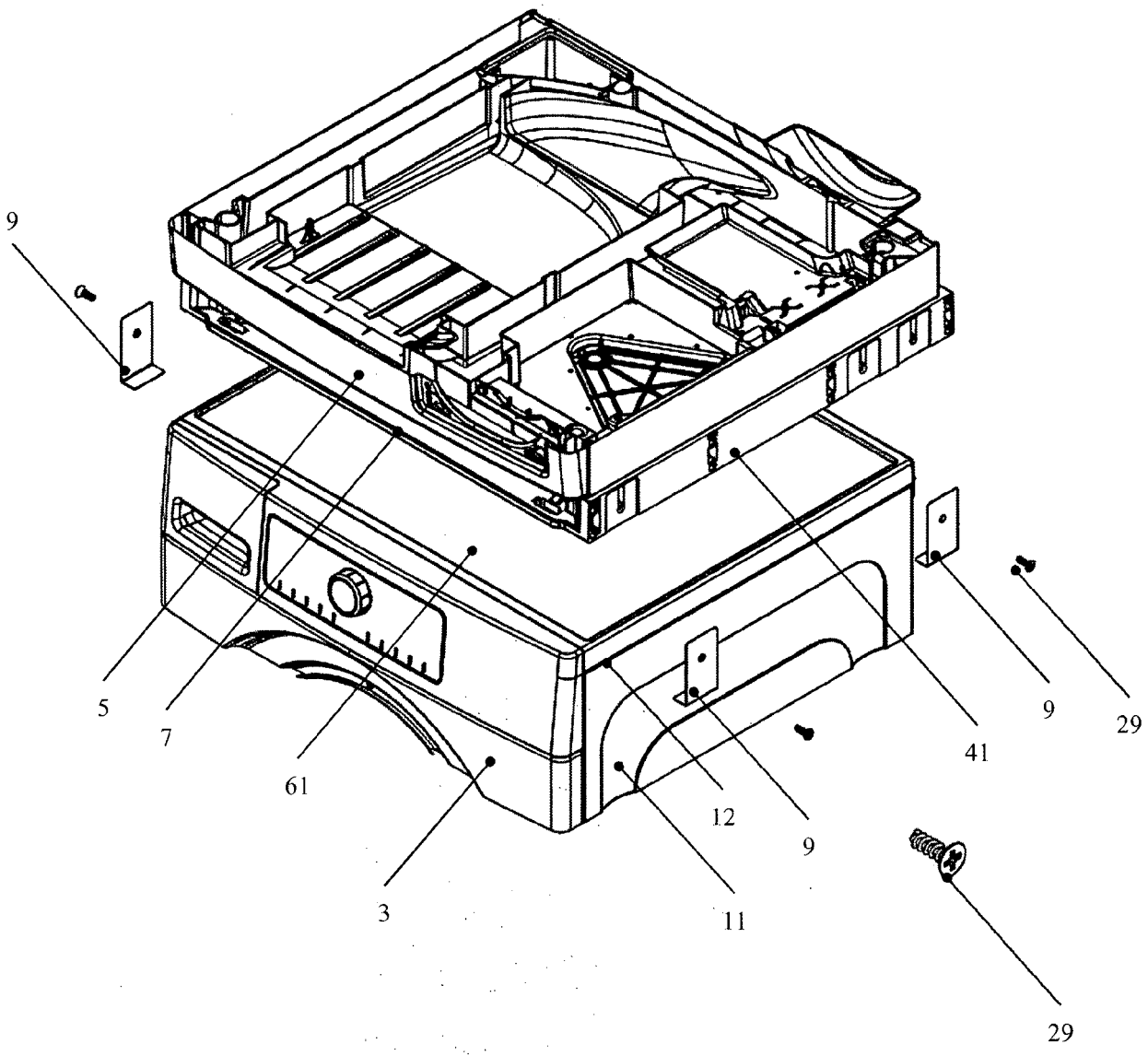

FIG. 5

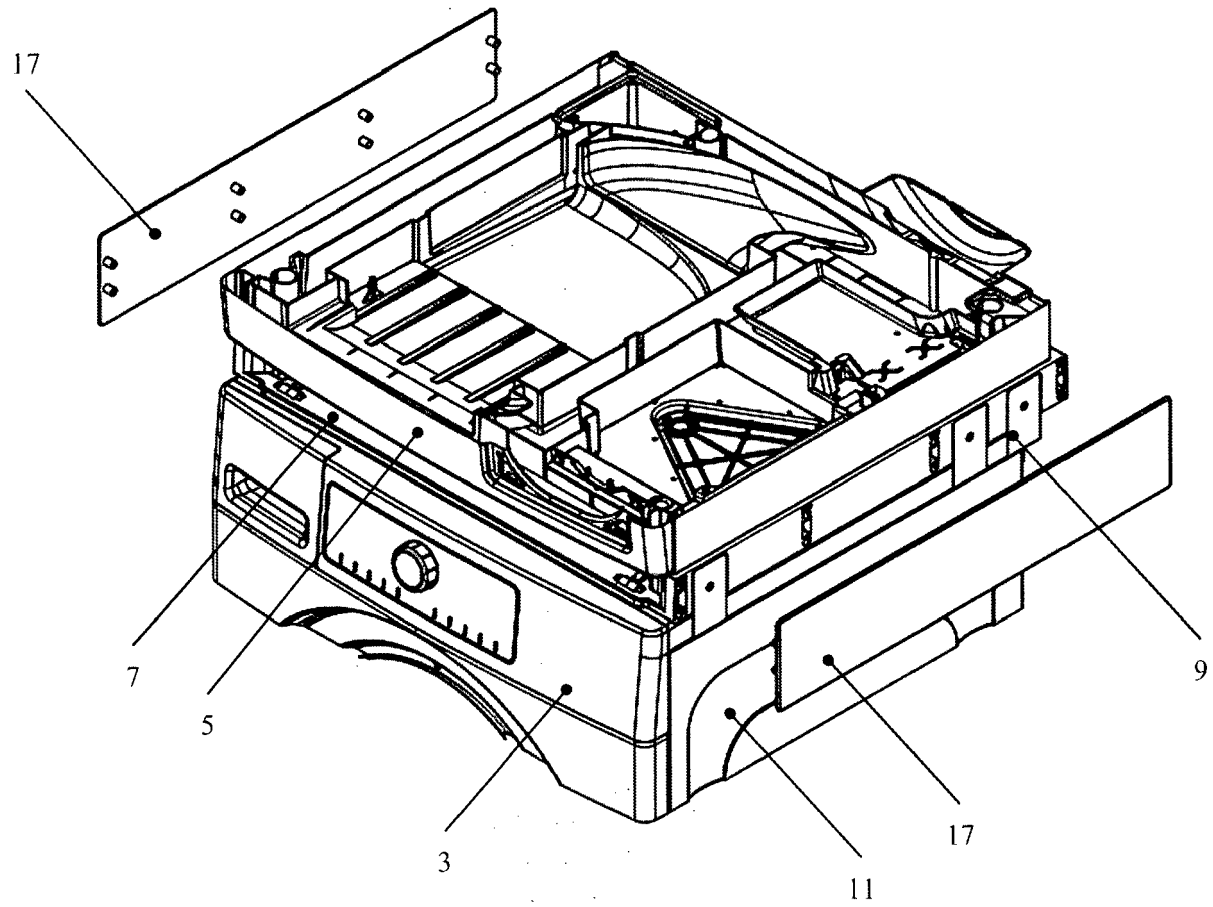

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 20 00 0425

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	15 March 2021	Sabatucci, Arianna

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15-03-2021

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