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(54) **A WASHER DRAWER**

(57) The present invention relates to a washer drawer (C) suitable for use in washing devices comprising an inner chamber in which washing/rinsing/drying operations are performed, a door, and a mains inlet line, said washer drawer (C) comprising a body (1) in which cleaning agents are stored; a water line (H) through which water is supplied into the body (1); a first compartment (1a) provided in the body (1), and in which a first liquid cleaning agent is stored; a second compartment (1b), in the body (1), for storing a second liquid cleaning agent used during a rinsing operation; a mixing compartment (1c), in the body (1), in which the first cleaning agent or second cleaning agent is mixed with water; a mixing line (H3) of which one end is connected to the water line (H) and the other end is opened to the mixing compartment (1c); a first pump (P1), on the body (1), supplying the first cleaning agent into the mixing line (H3); a second pump (P2), on the body (1), supplying the second cleaning agent into the mixing line (H3); a first line (H1) between the first pump (P1) and the mixing line (H3), and a second line (H2) between the second pump (P2) and the mixing line (H3).

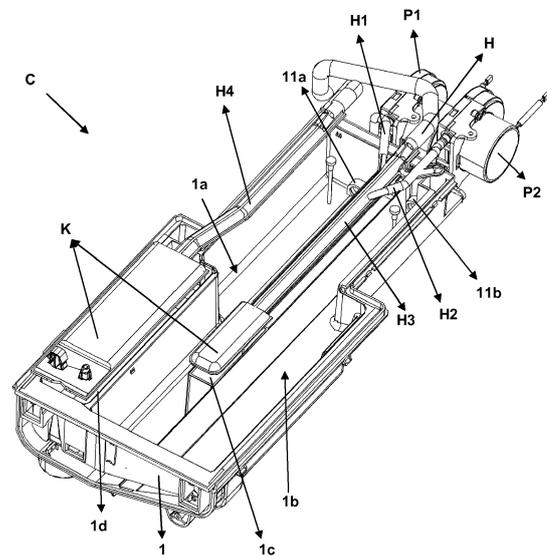


Figure 3

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**Description****Field of Invention**

[0001] The present invention relates to a drawer suitable for use in washing devices wherein operations such as washing/rinsing/drying of items are performed.

**Prior Art**

[0002] Today, the washers such as washing machines, dishwashers comprise drawers, where liquid or solid detergents, softeners, other cleaning agents etc., as a part of washing liquids used in washing and rinsing operations, are stored, and are drawn when necessary from the drawers and supplied into the part (e.g. drum) of the washing device where said operations are carried out. The drawers comprise a plurality of compartments to store the cleaning agents separately, wherein the cleaning agent corresponding to an operation to be performed on items is supplied from the respective compartment into the chamber of the washer to perform that operation. In order to perform the operation, water is also supplied from a source, e.g. municipal water system, into the chamber of the washer where said operation is performed. An exemplary washing machine detergent drawer is disclosed in the patent document AU2014214033A1. According to that document, water and cleaning agent cannot be mixed homogeneously in the drawer, therefore both the operations such as washing/rinsing of the items are not performed efficiently enough, and the residues of the cleansing agents which may be built up in the washing device can cause obstructions in the tubes of the washing device.

**Brief Description of Invention**

[0003] A washer drawer is developed according to the present invention suitable for use in washing devices comprising at least one inner chamber in which operations such as washing/rinsing/drying of items are performed, at least one door which provides access into the inner chamber, and at least one mains inlet line through which water is taken in from at least one water source. The washer drawer developed according to the present invention comprises at least one body in which said cleaning agents are stored; at least one water line through which water from a source, e.g. municipal water system, is supplied into the body; at least one first compartment which is provided in the body and in which a first liquid cleaning agent is stored before a washing operation; at least one second compartment which is provided in the body and in which a second liquid cleaning agent used during a rinsing operation of items being washed is stored; at least one mixing compartment which is provided in the body and in which first cleaning agent or second cleaning agent is supplied and mixed with water from the water source; at least one mixing line of which

at least one end is connected to the water line and of which at least the other end is opened to the mixing compartment; at least one first pump which is disposed on the body and provides the supply of the first cleaning agent from the first compartment into the mixing line; at least one second pump which is disposed on the body and provides the supply of the second cleaning agent from the second compartment into said mixing line; and at least one first line disposed between the first pump and the mixing line, and at least one second line disposed between the second pump and the mixing line.

[0004] Washing operations are performed in an efficient manner in washing devices wherein the washer drawer according to the present invention is used as a result of supplying the cleaning agents used for washing- and rinsing-like operations in a mixed form into the inner chamber where washing is done. Additionally, by virtue of measuring the weights, amount of dirt etc. of items to be washed and accordingly adjusting the amount of cleaning agents/water, washing devices comprising the washer drawer according to the present invention are rendered both economical and environmentally-friendly.

**Object of Invention**

[0005] The object of the present invention is to provide a washer drawer, in which cleaning agents such as detergents, softeners, etc. are stored, suitable for use in washing devices like washing machines.

[0006] Another object of the present invention is to provide a washer drawer, by means of which detergents, softeners, mains water, and similar agents are first mixed therein and then supplied to an inner chamber where washing is done.

[0007] A further object of the present invention is to provide a washer drawer, by means of which the cleaning agents and/or water used are automatically adjusted according to the amount of dirt and/or the weight of the items to be washed.

[0008] Still another object of the present invention is to provide a washer drawer, wherein electronic components such as pumps providing the supply of cleaning agents such as detergents, softeners etc. into the inner chamber are situated in a place different from the compartment in which the cleaning agents are stored.

[0009] Still a further object of the present invention is to provide a safe and durable washer drawer.

**Description of Figures**

[0010] Illustrative embodiments of a washer drawer according to the present invention are given in the accompanying figures described below.

Figure 1 is a perspective illustration of the washer drawer according to the present invention in which lids of the washer drawer are removed.

Figure 2 is a perspective illustration of the washer

drawer according to the present invention in which a top cover thereof is removed.

Figure 3 is a perspective illustration of the washer drawer according to the present invention in which the lids thereof are present.

Figure 4 is a detailed perspective illustration from the top of the washer drawer according to the present invention.

**[0011]** All the parts illustrated in figures are individually assigned a reference numeral and the corresponding terms of these numbers are listed as follows:

Washer drawer	(C)
Water line	(H)
First line	(H1)
Second line	(H2)
Mixing line	(H3)
Third line	(H4)
First pump	(P1)
Second pump	(P2)
Lid	(K)
Body	(1)
First compartment	(1a)
First outlet	(11a)
Second compartment	(1b)
Second outlet	(11b)
Mixing compartment	(1c)
Third compartment	(1d)
Top cover	(1e)
Transfer area	(1f)
Hole	(1g)
Opening	(1h)

### **Description of Invention**

**[0012]** Washing devices such as washing machines used to perform the washing/rinsing/drying operations of items make use of washing fluids which can comprise cleaning agents such as detergents, softeners, etc.. to carry out these operations. Water and cleaning agents comprised in the washing fluid are supplied from their sources into the washing device and transferred to an inner chamber where items are present in order to carry out said operations. In order to perform said operations in an efficient manner, the washing fluid should contain an adequate amount of cleaning agents. Accordingly, the present invention provides a washer drawer providing a homogenous mixing of cleaning agents such as detergents, softeners etc. with mains water and the supply of the resulting mixture into the inner chamber where the items are present.

**[0013]** The washer drawer (C) according to the present invention, illustrated in Figures 1-4, is suitable for use in washing devices (not illustrated in Figures), which can

be washing machines, comprising at least one inner chamber in which operations such as washing/rinsing/drying of items are performed, at least one door which provides access into the inner chamber, and at least one mains inlet line through which water from at least one water source is taken into the washing device, wherein said washer drawer (C) comprises at least one body (1) in which said cleaning agents are stored and which can preferably be moved to extend out of the washing device; preferably at least one handle so that the movement of the body (1) can be directed by a user; at least one water line (H) through which water from a source, e.g. municipal water system, is supplied into the body (1); at least one first compartment (1a) which is provided in the body (1) and in which a first liquid cleaning agent (e.g. detergent) is stored before a washing operation; at least one second compartment (1 b) which is provided in the body (1) and in which a second liquid cleaning agent (e.g. softener) used during a rinsing operation of items being washed is stored, and which preferably has a smaller volume than that of said first compartment (1a); at least one mixing compartment (1c) which is provided in the body (1), preferably between the first compartment (1a) and the second compartment (1b), and in which the first cleaning agent or the second cleaning agent is supplied and mixed with water from the water source; at least one mixing line (H3) of which at least one end is connected to the water line (H) and of which at least the other end is opened to the mixing compartment (1c); at least one first pump (P1) which is disposed on the body (1), preferably on an exterior side of the body (1), and allows to supply the first cleaning agent, preferably by dosing it (i.e. adjusting the amount), from the first compartment (1a) into the mixing line (H3); at least one second pump (P2) which is disposed on the body (1), preferably on an exterior side of the body (1), and allows to supply the second cleaning agent, preferably by dosing it (i.e. adjusting the amount), from the second compartment (1 b) into said mixing line (H3); and at least one first line (H1) situated between the first pump (P1) and the mixing line (H3), and at least one second line (H2) situated between the second pump (P2) and the mixing line (H3).

**[0014]** In an exemplary embodiment of the washer drawer (C) according to the present invention, the first cleaning agent is filled into the first compartment (1 a) and the second cleaning agent is filled into the second compartment (1b). While items in the inner chamber are washed, a determined amount of the first cleaning agent (detergent) is drawn from the first compartment (1 a) by means of the first pump (P1) into the first line (H1), and then transferred from here to the mixing line (H3). During the time the first cleaning agent is supplied to the mixing line (H3), water from the water source is also supplied to the mixing line (H3) through the water line (H). The first cleaning agent and water advanced through the mixing line (H3) and supplied to the mixing chamber (1c) are mixed into each other. Similarly, for example during the rinsing step of the items which were already washed, a

determined amount of the second cleaning agent (softener) stored in the second compartment (1b) is drawn from the second compartment (1b) by means of the second pump (P2) into the second line (H2), and then transferred from here to the mixing line (H3). During the time the second cleaning agent is supplied to the mixing line (H3), water from the water source is also supplied to the mixing line (H3) through the water line (H). The second cleaning agent and water advanced through the mixing line (H3) and supplied to the mixing chamber (1c) are mixed into each other. By virtue of passing the cleaning agents (first cleaning agent and second cleaning agent) together with water through the mixing line (H3), it is ensured that the cleaning agents and water are homogeneously mixed and the mixture is passed through the mixing compartment (1c) and then supplied into the inner chamber.

**[0015]** In an alternative embodiment as illustrated in Figure 2, the washer drawer (C) comprises at least one third compartment (1d), which is provided in the body, preferably on the other side of the first compartment (1a) which is far from the second compartment (1b), in which a third cleaning agent which may be a powder detergent is stored, and which comprises at least one opening (1h) to let the third cleaning agent out of the washer drawer (C) (e.g. supply into the inner chamber). By virtue of the third compartment (1d), the washer drawer (C) can also be used in current washing devices using powder detergents.

**[0016]** In a preferred embodiment of the present invention illustrated in Figure 1, the washer drawer (C) comprises at least one top cover (1e) situated on an upper side of the body (1). In this embodiment, the top cover (1e) comprises, on an area corresponding to the top of the mixing compartment (1c) when it (1e) is placed on the body (1), at least one transfer area (1f) provided with a plurality of holes (1g), wherein at least one end of said mixing line (H3) is connected to said transfer area (1f). Cleaning agent from the first line (H1) or the second line (H2) combines in the mixing line (H3) with water from the water line (H) and delivered together to the transfer area (1f). The mixture of cleaning agent and water is passed through the holes (1g) in the transfer area (1f) and poured into the mixing compartment (1c). Thus, a better mixing is ensured in the mixture as it is passed through the holes (1g). In an embodiment, the top cover (1e) comprises, on an area corresponding to the top of said third compartment (1d) when it (1e) is placed on the body (1), at least one transfer area (1f) provided with a plurality of holes (1g), wherein at least one third line (H4) in communication with a water source (e.g. municipal water system) is connected to said transfer area (1f). The third cleaning agent is filled into said third compartment (1d) before a washing operation and water from the third line (H4) is poured through the holes (1g) provided in the transfer area (1f) over the cleaning agent present in the third compartment (1d). The mixture of the cleaning agent and water is let out of the washer drawer (C) through the

opening (1h) provided in the third compartment (1d).

**[0017]** In a preferred embodiment, in order to prevent water or a mixture of water-cleaning liquid entering into the transfer area (1f) from leaking from the transfer area (1f) out of the body (1), the top cover (1e) comprises at least one lid (K) situated on the transfer area (1f). In case the lid (K) is placed on the transfer area (1f), sealing is ensured.

**[0018]** In another embodiment of the present invention, the body (1) comprises at least one first outlet (11a) providing communication between the first compartment (1a) and the first pump (P1). Similarly, in a further preferred embodiment, the body (1) comprises at least one second outlet (11b) between the second compartment (1b) and the second pump (P2), providing communication between the second compartment (1b) and the second pump (P2). In these embodiments, cleaning agents present in the first compartment (1a) and/or second compartment (1b) are passed through the first outlet (11a) and/or the second outlet (11b) and delivered into the first pump (P1) and/or the second pump (P2). By virtue of the first outlet (11a) and the second outlet (11b), it is ensured to dispose the first pump (P1) and the second pump (P2) outside of the body (1). Thus, it is avoided that the electronic components generally present in the pump are placed within the body (1) which contains a liquid. Thus, a safe washer drawer (C) is obtained.

**[0019]** In another preferred embodiment of the present invention, the washer drawer (C) comprises at least one sensor (not illustrated in Figures) for measuring parameters like the amount, weight, amount of dirt etc. of items placed into the inner chamber, and at least one control element (not illustrated in Figures) for adjusting the amount of water and/or of the cleaning agent(s) (first cleaning agent, second cleaning agent) used in the washing and/or rinsing operation(s) according to the measured values. In a preferred embodiment, the control element is coupled to the first pump (P1) and/or to the second pump (P2) and/or to at least one main pump (not illustrated in Figures) feeding water into the body (1). In an embodiment in which the washer drawer (C) comprises a first outlet (11a) and a second outlet (11b) (in other words, in case the first pump (P1) and the second pump (P2) are disposed outside of the body (1)), the first cleaning agent and/or the second cleaning agent are filled into the first compartment (1a) and/or the second compartment (1b). Since the first pump (P1) and the second pump (P2) are disposed outside of the body (1), the body's (1) volume can store a greater amount of cleaning agent as compared to a drawer body comprised by known washing devices. Therefore, the cleaning agent filled into the body (1) can be used in more than one washing operations. In this embodiment, the first cleaning agent and the second cleaning agent are filled into the first compartment (1a) and the second compartment (1b), and the amount of water and/or of the first cleaning agent and/or the second cleaning agent fed into the mixing line (H3) in a washing and/or rinsing operation is adjusted according to the

data received from said control element. Thus, although it is not required to add cleaning agent into the washer drawer (C) anytime a washing operations is started, any overuse of cleaning agent and water is avoided. Thus, an environmentally-friendly and economical washer drawer (C) is obtained.

**[0020]** The washer drawer (C) developed according to the present invention provides the storage of cleaning agents such as a detergent, a softener, etc. in washing devices, and further provides the mixing of the cleaning agents and water, which is supplied from a water source, in the washer drawer before washing/rinsing operations and then the supply of the resulting mixture into the inner chamber where said operations are performed. Additionally, the washer drawer (C) according to the present invention provides an automatic adjustment of the cleaning agents and/or water to be used according to the weight and/or the amount of dirty of items to be washed, and thus a washing device comprising said washer drawer (C) is rendered economical.

### Claims

1. A washer drawer (C) suitable for use in washing devices comprising at least one inner chamber in which operations such as washing/rinsing/drying of items are performed, at least one door which provides access into the inner chamber, and at least one mains inlet line through which water is taken in from at least one water source, **characterized by** comprising:

- at least one body (1) in which cleaning agents are stored;
- at least one water line (H) through which water from a source, which can be mains, is supplied into the body (1);
- at least one first compartment (1a) which is provided in the body (1) and in which a first liquid cleaning agent is stored before a washing operation;
- at least one second compartment (1b) which is provided in the body (1) and in which a second liquid cleaning agent used during a rinsing operation of the items being washed is stored;
- at least one mixing compartment (1c) which is provided in the body (1) and in which the first cleaning agent or the second cleaning agent is supplied and mixed with water from the source;
- at least one mixing line (H3), at least one end of which is connected to the water line (H), and at least the other end of which is opened to the mixing compartment (1c);
- at least one first pump (P1) which is disposed on the body (1) and provides the supply of the first cleaning agent from the first compartment (1a) into the mixing line (H3);
- at least one second pump (P2) which is dis-

posed on the body (1) and provides the supply of the second cleaning agent from the second compartment (1b) into said mixing line (H3);

- and at least one first line (H1) situated between the first pump (P1) and the mixing line (H3); and
- at least one second line (H2) situated between the second pump (P2) and the mixing line (H3).

2. The washer drawer (C) according to claim 1, **characterized in that** the second compartment (1b) has a volume which is smaller than that of the first compartment (1 a).

3. The washer drawer (C) according to claim 1, **characterized in that** the mixing compartment (1c) is provided between the first compartment (1a) and the second compartment (1b).

4. The washer drawer (C) according to claim 1, **characterized in that** the first cleaning agent is supplied by dosing, from the first compartment (1a) into the mixing line (H3).

5. The washer drawer (C) according to claim 1, **characterized in that** the first pump (P1) is provided outside of the body (1).

6. The washer drawer (C) according to claim 1, **characterized in that** the second cleaning agent is supplied by dosing, from the second compartment (1b) into the mixing line (H3).

7. The washer drawer (C) according to claim 1, **characterized in that** the second pump (P2) is provided outside of the body (1).

8. The washer drawer according to claim 1, **characterized by** comprising at least one third compartment (1d), which is provided in the body (1), and in which a third cleaning agent which can be a powder detergent is stored, and which comprises at least one opening (1 h) to let the third cleaning agent out of the washer drawer.

9. The washer drawer (C) according to claim 8, **characterized in that** the third compartment (1d) is situated on the other side of the first compartment (1a) which is far from the second compartment (1 b).

10. The washer drawer (C) according to claim 1, **characterized by** comprising at least one top cover (1e) disposed on an upper side of the body (1).

11. The washer drawer (C) according to claim 10, **characterized in that** the top cover (1 e) comprises, on an area corresponding to the top of the mixing compartment (1 c) when it (1e) is placed on the body (1), at least one transfer area (1f) provided with a plurality

of holes (1g), wherein at least one end of said mixing line (H3) is in connection with said transfer area (1f).

12. The washer drawer (C) according to claim 10, **characterized in that** the top cover (1 e) comprises, on an area corresponding to the top of said third compartment (1d) when it (1e) is placed on the body (1), at least one transfer area (1f) provided with a plurality of holes (1g), wherein at least one third line (H4) in communication with a water source which can be the mains, is in connection with said transfer area (1f).

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13. The washer drawer (C) according to claim 1 or 5, **characterized in that** the body (1) comprises at least one first outlet (11a) providing communication between the first compartment (1 a) and the first pump (P1).

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14. The washer drawer (C) according to claim 1 or 7, **characterized in that** the body (1) comprises at least one second outlet (11b) between the second compartment (1b) and the second pump (P2), providing communication between the second compartment (1 b) and the second pump (P2).

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15. The washer drawer (C) according to claim 1, **characterized by** comprising at least one sensor for measuring parameters like the amount, weight, amount of dirt etc. of items placed into the inner chamber; and at least one control element adjusting the amount of water and/or of the cleaning agent to be used in washing and/or rinsing operation(s) to be performed according to measured values, and having connection to the first pump (P1) and/or the second pump (P2) and/or to at least one main pump providing the supply of water into the body (1).

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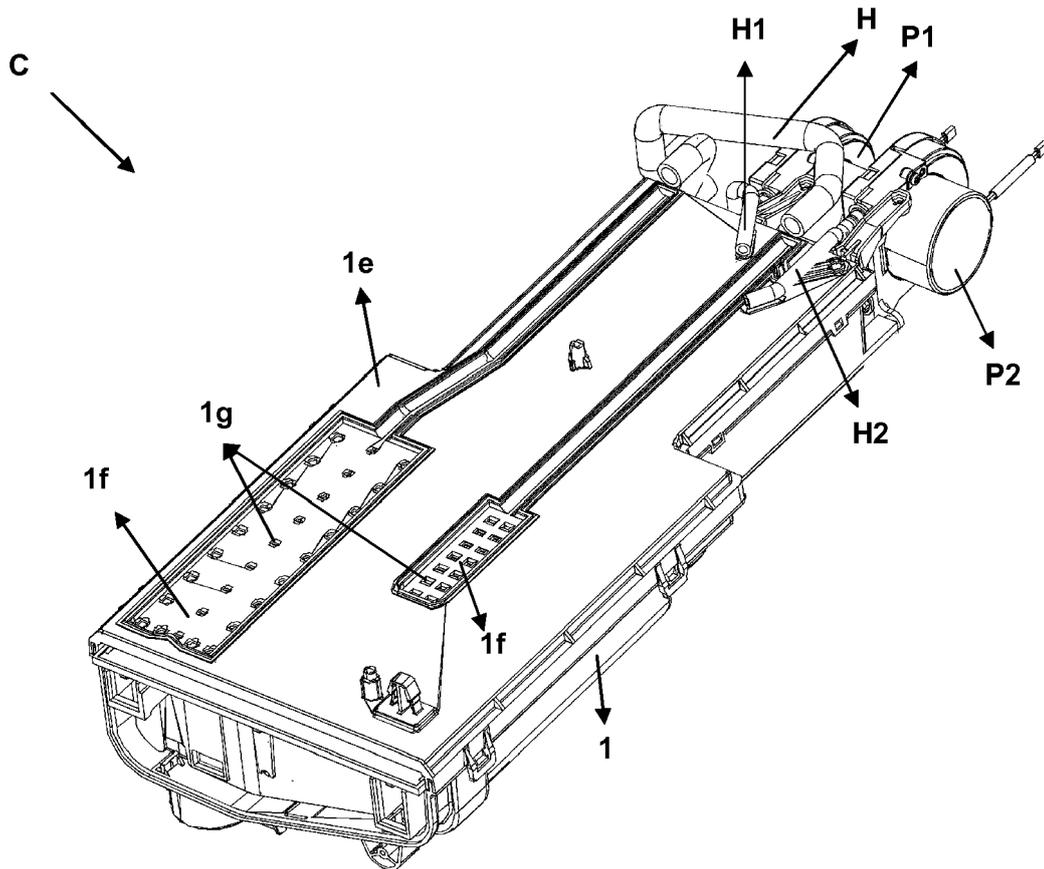


Figure 1

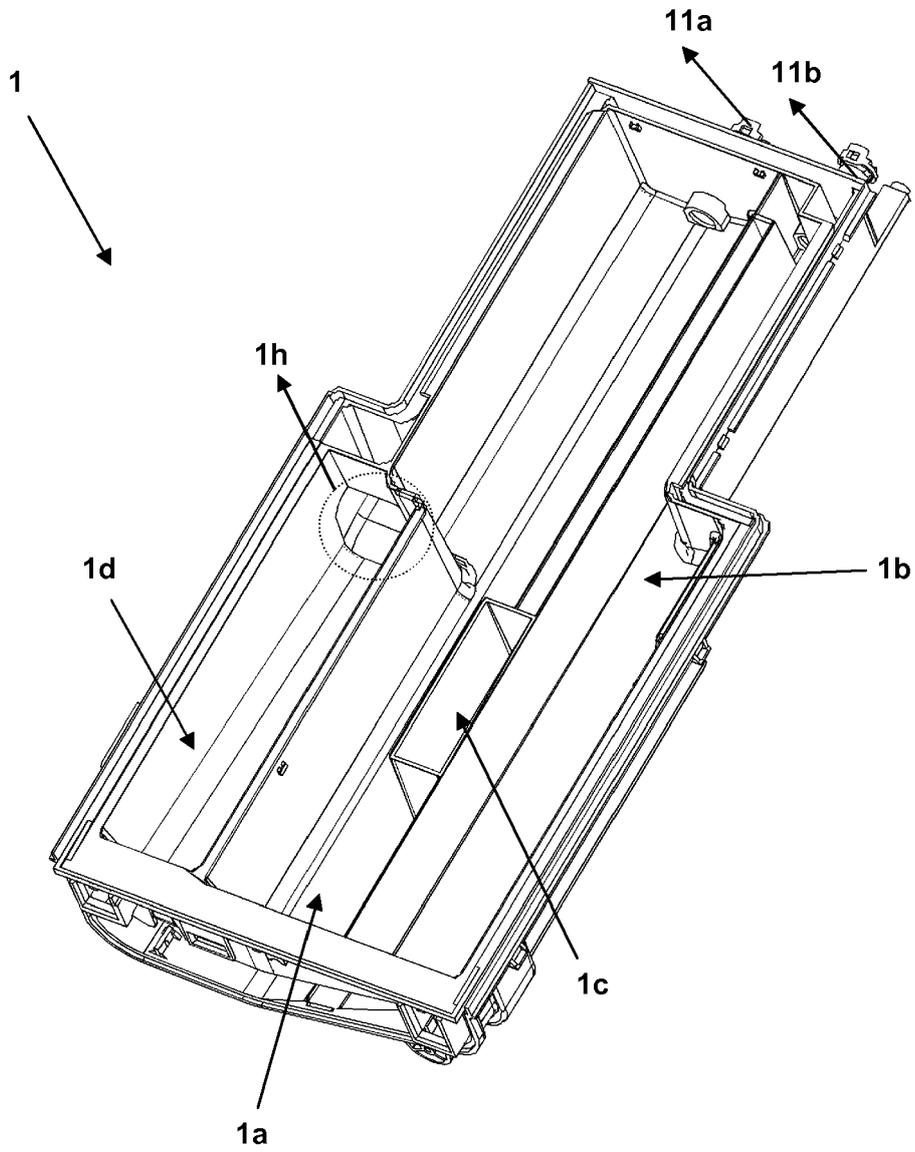


Figure 2

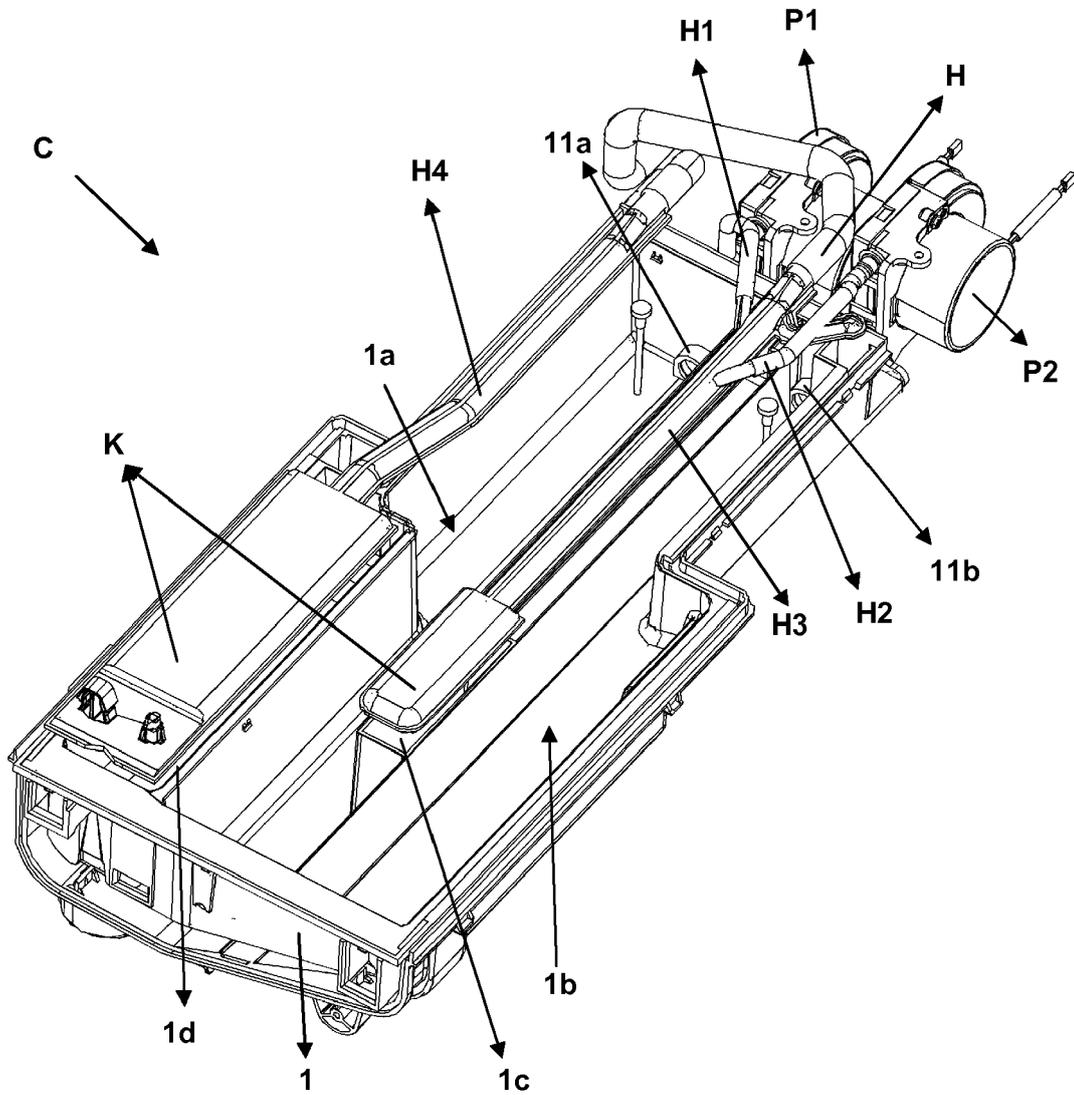


Figure 3

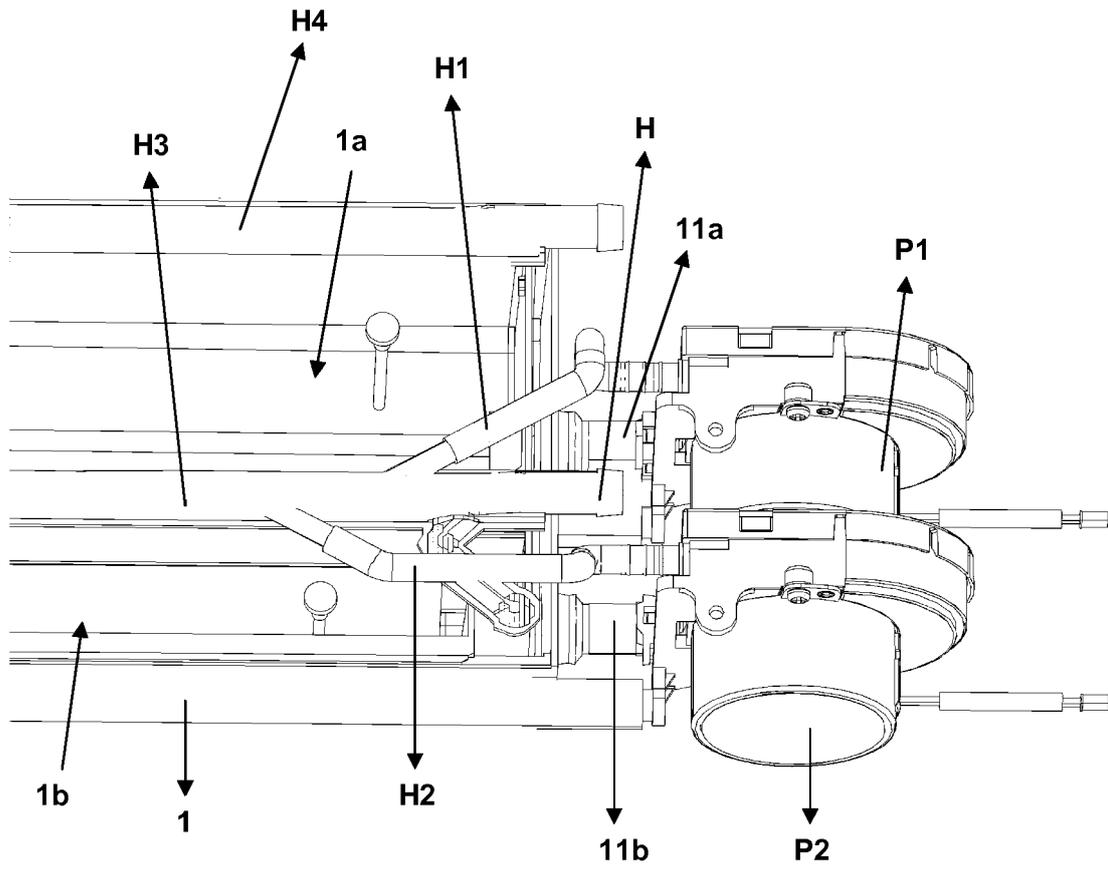


Figure 4



EUROPEAN SEARCH REPORT

Application Number  
EP 16 20 4929

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 2 251 481 A1 (ELECTROLUX HOME PROD CORP [BE]) 17 November 2010 (2010-11-17)	1-7,10,13,14	INV. D06F39/02
Y	* paragraphs [0031] - [0033] * * paragraphs [0036] - [0043] * * paragraphs [0046] - [0049] * * figures 1-3B *	8,9,11,12,15	ADD. D06F33/02
Y	----- WO 2015/032656 A1 (ARCELIK AS [TR]; KURTKAYA KAGAN [TR]; AYTEN SERDAR [TR]; CORCHES FLORI) 12 March 2015 (2015-03-12)	8,9,12,15	
A	* paragraphs [0040] - [0043] * * figures 2, 3 *	1	
Y	----- EP 2 666 900 A1 (SAMSUNG ELECTRONICS CO LTD [KR]) 27 November 2013 (2013-11-27)	11	
A	* paragraphs [0026] - [0031] * * figures 2-5 *	1	
A	----- DE 10 2008 042655 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 8 April 2010 (2010-04-08)	1,10,13-15	TECHNICAL FIELDS SEARCHED (IPC) D06F
	* paragraphs [0032] - [0036] * * figures 1-3 *		
-----			
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>24 May 2017</b>	Examiner <b>Weidner, Maximilian</b>
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		& : member of the same patent family, corresponding document	

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 16 20 4929

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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24-05-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2251481 A1	17-11-2010	BR PI1014270 A2	05-04-2016
		CN 102421958 A	18-04-2012
		EP 2251481 A1	17-11-2010
		RU 2011150208 A	20-06-2013
		US 2012096901 A1	26-04-2012
		WO 2010130586 A1	18-11-2010
WO 2015032656 A1	12-03-2015	CN 105683437 A	15-06-2016
		EP 3041982 A1	13-07-2016
		US 2016194813 A1	07-07-2016
		WO 2015032656 A1	12-03-2015
EP 2666900 A1	27-11-2013	AU 2013264545 A1	04-12-2014
		CA 2874018 A1	28-11-2013
		CN 103422328 A	04-12-2013
		EP 2666900 A1	27-11-2013
		KR 20130131653 A	04-12-2013
		RU 2014147012 A	20-06-2016
		US 2013312463 A1	28-11-2013
		WO 2013176479 A1	28-11-2013
DE 102008042655 A1	08-04-2010	CN 102741472 A	17-10-2012
		DE 102008042655 A1	08-04-2010
		DE 202008017876 U1	23-09-2010
		EA 201170487 A1	30-12-2011
		EP 2340326 A1	06-07-2011
		EP 2428607 A2	14-03-2012
		EP 2439325 A2	11-04-2012
		EP 2439326 A2	11-04-2012
		KR 20110081180 A	13-07-2011
		KR 20130020928 A	04-03-2013
		KR 20130020929 A	04-03-2013
		KR 20130020930 A	04-03-2013
		US 2011186098 A1	04-08-2011
WO 2010040674 A1	15-04-2010		

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- AU 2014214033 A1 [0002]