(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 183 915 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.05.2023 Bulletin 2023/21

(21) Application number: **22203830.9**

(22) Date of filing: **26.10.2022**

(51) International Patent Classification (IPC):
D06F 58/22 *(2006.01)* ***D06F 37/26*** *(2006.01)*
D06F 25/00 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
D06F 58/22; D06F 37/266; D06F 25/00

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **17.11.2021 CN 202111359743**

(71) Applicant: **BSH Hausgeräte GmbH**
81739 München (DE)

(72) Inventors:
- **Guo, Guangtao**
  Nanjing (CN)
- **Wang, Yongjia**
  Nanjing, 210000 (CN)
- **Zhang, Qi**
  Nanjing, 210046 (CN)

(54) **LAUNDRY HANDLING DEVICE**

(57) The present disclosure relates to a laundry handling device (10), including: a case (12), including a first opening (14); a laundry handling container (16), located in the case (12), and including a second opening (18) corresponding to the first opening (14); a circulating air channel (20), in fluid communication with the laundry handling container (16); a door seal assembly (22), connecting the first opening (14) and the second opening (18), the door seal assembly (22) including a third opening (24), and the third opening (24) being in fluid communication with the circulating air channel (20); and a filter screen assembly (26), arranged close to the third opening (24), the filter screen assembly (26) being detachably connected to the circulating air channel (20) and/or the door seal assembly (22), so as to filter air circulating between the circulating air channel (20) and the laundry handling container (16).

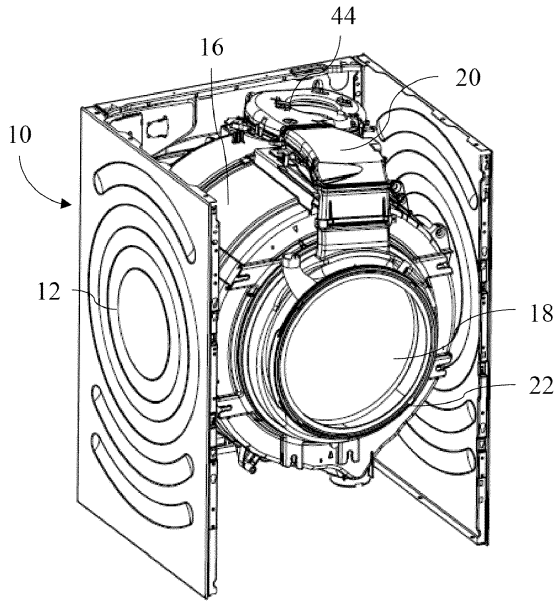

FIG. 2

EP 4 183 915 A1

Description

[0001] The present disclosure relates to the technical field of laundry handling, and in particular to a laundry handling device.

[0002] Fluffs in the air circulating in some existing laundry handling devices may accumulate and are difficult to clean up. As a result, the laundry handling devices need to be improved.

[0003] The purpose of the present disclosure is to solve, for example, at least one of the problems above.

[0004] For the foregoing purpose, one aspect of embodiments of the present disclosure relates to a laundry handling device, including: a case, including a first opening; a laundry handling container, located in the case, and including a second opening corresponding to the first opening; a circulating air channel, in fluid communication with the laundry handling container; a door seal assembly, connecting the first opening and the second opening, the door seal assembly including a third opening, and the third opening being in fluid communication with the circulating air channel; and a filter screen assembly, arranged close to the third opening, the filter screen assembly being detachably connected to the circulating air channel and/or the door seal assembly, so as to filter air circulating between the circulating air channel and the laundry handling container.

[0005] In this way, it is beneficial to facilitating cleaning of fluffs carried in the air circulating in the laundry handling device, and reducing or eliminating the possibility of fluff accumulation.

[0006] Optionally, the filter screen assembly is magnetically connected to the circulating air channel and/or the door seal assembly. In this way, it is beneficial to conveniently mounting and dismounting the filter screen assembly.

[0007] Optionally, the circulating air channel and/or the door seal assembly includes a first connecting part, the filter screen assembly includes a second connecting part matching the first connecting part, one of the first connecting part and the second connecting part includes a magnet, and the other of the first connecting part and the second connecting part includes a magnet or a ferromagnetic metal.

[0008] In this way, it is beneficial to conveniently mounting and dismounting the filter screen assembly.

[0009] Optionally, the circulating air channel includes a first bonding part, the door seal assembly includes a second bonding part bonded to the first bonding part, and the first bonding part is adjacent to the first connecting part. In this way, it is beneficial to processing and assembling the laundry handling device simply and conveniently.

[0010] Optionally, the filter screen assembly includes a filter screen frame at least partially received in the circulating air channel and/or the door seal assembly and a filter screen connected to the filter screen frame.

[0011] In this way, it is beneficial to effectively utilizing the space of the laundry handling device, facilitating cleaning of fluffs, and reducing or eliminating the possibility of fluff accumulation.

[0012] Optionally, an edge portion of the filter screen is fixed to the filter screen frame, and a middle portion of the filter screen extends from the filter screen frame to a circulating air flow direction.

[0013] In this way, it is beneficial to increasing the filtering area of the filter screen assembly.

[0014] Optionally, the circulating air channel and/or the door seal assembly includes a first connecting part, the filter screen assembly includes a second connecting part matching the first connecting part, and the second connecting part is arranged on the filter screen frame.

[0015] In this way, it is beneficial to guaranteeing the filtering area of the filter screen assembly.

[0016] Optionally, the filter screen assembly includes a handle part extending from the filter screen frame to the direction of the third opening.

[0017] In this way, it is beneficial to conveniently mounting and dismounting the filter screen assembly from the direction of the third opening. Optionally, the handle part is narrower than the filter screen.

[0018] In this way, it is beneficial to reducing or avoiding the influence of air circulation, and facilitating mounting and dismounting of the filter screen assembly.

[0019] Optionally, the handle part is fitted to a wall of the circulating air channel and/or the door seal assembly. In this way, it is beneficial to reducing or avoiding the influence of air circulation.

[0020] Optionally, the handle part does not extend out of the third opening.

[0021] In this way, it is beneficial to achieving attractive appearance and a compact structure of the laundry handling device.

[0022] Optionally, the size of the filter screen frame is adapted to the size of the circulating air channel and/or the door seal assembly at the mounting position of the filter screen frame.

[0023] In this way, it is beneficial to achieving firm bonding between the filter screen frame and the circulating air channel and/or the door seal assembly, and guaranteeing the filtering area of the filter screen assembly.

[0024] Optionally, the door seal assembly includes an air channel extending out from the third opening to the direction of the circulating air channel and connected to the circulating air channel, and the filter screen assembly is at least partially received in the air channel.

[0025] In this way, it is beneficial to achieving attractive appearance and a compact structure of the laundry handling device.

[0026] Optionally, the laundry handling device includes a blower device for promoting air to circulate and communicate between the circulating air channel and the laundry handling container.

[0027] In this way, it is beneficial to promoting circulation of air inside the laundry handling device.

[0028] If technical conditions permit, the technical so-

lutions of the foregoing embodiments can be combined arbitrarily. The present disclosure is further described below in combination with the accompanying drawings. The same or similar reference numerals may be used in the drawings to refer to the same or similar elements, shapes, configurations, features, etc. in different embodiments, and the same or similar elements, shapes, configurations, features, effects, etc. in different embodiments and existing elements, shapes, configurations, features, effects, etc. in the related art may be omitted.

FIG. 1 is a partial schematic perspective view of a laundry handling device according to one aspect of embodiments of the present disclosure.

FIG. 2 is another partial schematic perspective view of the laundry handling device in FIG. 1.

FIG. 3 is a partial schematic exploded and perspective view of the laundry handling device in FIG. 1.

FIG. 4 is a schematic perspective view of a filter screen assembly of the laundry handling device in FIG. 1.

[0029] FIG. 1 is a partial schematic perspective view of a laundry handling device according to one aspect of embodiments of the present disclosure. FIG. 2 is another partial schematic perspective view of the laundry handling device in FIG. 1. FIG. 3 is a partial schematic exploded and perspective view of the laundry handling device in FIG. 1. As shown in FIG. 1, FIG. 2, and FIG. 3, one aspect of embodiments of the present disclosure relates to a laundry handling device 10, including: a case 12, including a first opening 14; a laundry handling container 16, located in the case 12, and including a second opening 18 corresponding to the first opening 14; a circulating air channel 20, in fluid communication with the laundry handling container 16; a door seal assembly 22, connecting the first opening 14 and the second opening 18, the door seal assembly 22 including a third opening 24, and the third opening 24 being in fluid communication with the circulating air channel 20; and a filter screen assembly 26, arranged close to the third opening 24, the filter screen assembly 26 being detachably connected to the circulating air channel 20 and/or the door seal assembly 22, so as to filter air circulating between the circulating air channel 20 and the laundry handling container 16.

[0030] In this way, it is beneficial to facilitating cleaning of fluffs carried in the air circulating in the laundry handling device 10, and reducing or eliminating the possibility of fluff accumulation.

[0031] For example, the door seal assembly 22 connects the first opening 14 and the second opening 18, and the filter screen assembly 26 can be mounted or dismounted from the third opening 24 through the first opening 14, thereby facilitating user operation. Fluffs in the air circulating during the use of the laundry handling device 10 can stay in the filter screen assembly 26, to reduce or eliminate the possibility of accumulation or blockage in the circulating air channel 20, the door seal assembly 22, etc. The filter screen assembly 26 can be dismounted through the first opening 14 and the third opening 24 to clean the fluffs thereon. The cleaned filter screen assembly 26 can be mounted back into the laundry handling device 10 through the first opening 14 and the third opening 24 for reuse.

[0032] The words "first", "second", and "third" in this text do not intend to represent the priority, importance or the like, but only intend to help distinguish each other.

[0033] The orientations and relationships represented by words such as "inside", "outside", "front", "rear", "upper", "lower", "left", and "right" in this text may refer to those shown in the accompanying drawings, or may correspond to the orientations and relationships in actual use of the laundry handling device 10.

[0034] The laundry handling device 10 may be a washer-dryer combo, for example, a condenser washer-dryer combo. The case 12 may be a substantially cuboid including front, rear, left, right, upper, and lower walls. The laundry handling device 10 may include a door 13 arranged on the front wall of the case 12, which can open/close the first opening 14. In a case that the door 13 is opened, laundry to be handled (not shown) can be put into the laundry handling container 16 through the first opening 14 and the second opening 18 to be washed, dried, or handled in other ways, or the handled laundry (not shown) can be taken out from the laundry handling container 16 from the second opening 18 and the first opening 14.

[0035] In FIG. 1, a part above the position where the door 13 is located on the front wall of the case 12 is removed, so as to display the internal structure of the part of the laundry handling device 10. In FIG. 2, the upper wall, the front wall, the door 14, and the lower wall of the case 12 are removed, so as to display the structures inside the laundry handling device 10, such as the laundry handling container 16 and the circulating air channel 20.

[0036] Air in the circulating air channel 20 can enter the laundry handling container 16 from the third opening 24 and the second opening 18, so as to dry the laundry in the laundry handling container. The air in the laundry handling container 16 can flow back to the circulating air channel 20 to be heated and dehumidified, and then flow to the laundry handling container. The process proceeds in circles.

[0037] Optionally, the filter screen assembly 26 is magnetically connected to the circulating air channel 20 and/or the door seal assembly 22.

[0038] In this way, it is beneficial to conveniently mounting and dismounting the filter screen assembly 26.

[0039] The magnetic connection can facilitate dismounting and mounting the filter screen assembly 26 and sensing the dismounting and mounting of the filter screen assembly 26, thereby facilitating blind mounting, and achieving less limit by the visual range.

[0040] Optionally, the circulating air channel 20 and/or the door seal assembly 22 includes a first connecting

part 28, the filter screen assembly 26 includes a second connecting part 30 matching the first connecting part 28, one of the first connecting part 28 and the second connecting part 30 includes a magnet, and the other of the first connecting part 28 and the second connecting part 30 includes a magnet or a ferromagnetic metal.

[0041] In this way, it is beneficial to conveniently mounting and dismounting the filter screen assembly 26.

[0042] Therefore, the first connecting part 28 and the second connecting part 30 can be connected to each other through mutual attraction between the magnet and the magnet or between the magnet and the ferromagnetic metal. The magnetic connection can be broken using a separation force greater than the attraction force. The magnet may be a permanent magnet or an electromagnet.

[0043] Examples of the ferromagnetic metal include, but are not limited to, iron, nickel, and cobalt.

[0044] Optionally, the circulating air channel 20 includes a first bonding part 32, the door seal assembly 22 includes a second bonding part 34 bonded to the first bonding part 32, and the first bonding part 32 is adjacent to the first connecting part 28.

[0045] In this way, it is beneficial to processing and assembling the laundry handling device 10 simply and conveniently.

[0046] The first bonding part 32 and the second bonding pat 34 may be bonded to each other in a receiving manner that the inner side receives the outer side. The first connecting part 28 may be arranged on the inner side of the first bonding part 32 and/or the second bonding part 34.

[0047] FIG. 4 is a schematic perspective view of a filter screen assembly of the laundry handling device in FIG. 1. Referring to FIG. 4, optionally, the filter screen assembly 26 includes a filter screen frame 36 at least partially received in the circulating air channel 20 and/or the door seal assembly 22 and a filter screen 38 connected to the filter screen frame 36.

[0048] In this way, it is beneficial to effectively utilizing the space of the laundry handling device 10, facilitating cleaning of fluffs, and reducing or eliminating the possibility of fluff accumulation.

[0049] The filter screen frame 36 is at least partially received in the circulating air channel 20 and/or the door seal assembly 22, which is beneficial to occupying less or even no space in other parts of the laundry handling device 10, and thus avoiding excessive influence on the spatial arrangement of the laundry handling device 10. The filter screen 38 can intercept and filter fluffs carried in the air passing through the filter screen, thereby reducing or eliminating the possibility of fluff accumulation and blockage in other parts.

[0050] Optionally, an edge portion of the filter screen 38 is fixed to the filter screen frame 36, and a middle portion of the filter screen 38 extends from the filter screen frame 36 to a circulating air flow direction.

[0051] Compared with planar filter screen structures, it is beneficial to increasing the filtering area of the filter screen assembly 26. The convex direction of the filter screen 38 is along the circulating air flow direction, which is beneficial to concentrating the intercepted fluffs in the filter screen 38 to facilitate cleaning.

[0052] The filter screen frame 36 can support and fix the filter screen 38. The filter screen 38 can intercept and filter fluffs carried in the circulating air passing through the filter screen, thereby reducing or eliminating the possibility of fluff accumulation and blockage in other parts.

[0053] Optionally, the circulating air channel 20 and/or the door seal assembly 22 includes a first connecting part 28, the filter screen assembly 26 includes a second connecting part 30 matching the first connecting part 28, and the second connecting part 30 is arranged on the filter screen frame 36.

[0054] In this way, it is beneficial to guaranteeing the filtering area of the filter screen assembly 26.

[0055] The filter screen frame 36 can fit with the circulating air channel 20 and/or the door seal assembly 22 by the second connecting part 30 so as to be mounted and fixed.

[0056] Optionally, the filter screen assembly 26 includes a handle part 40 extending from the filter screen frame 36 to the direction of the third opening 24.

[0057] In this way, it is beneficial to conveniently mounting and dismounting the filter screen assembly 26 from the direction of the third opening 24.

[0058] For example, the handle part 40 can be held or clamped to move the filter screen assembly 26 toward the circulating air channel 20 and/or the door seal assembly 22 from the third opening 24 for connecting and mounting.

[0059] The handle part 40 can be held or clamped to separate the filter screen assembly 26 from the circulating air channel 20 and/or the door seal assembly 22 and take out the filter screen assembly from the third opening 24.

[0060] Optionally, the handle part 40 is narrower than the filter screen 38.

[0061] In this way, it is beneficial to reducing or avoiding the influence of air circulation, and facilitating mounting and dismounting of the filter screen assembly 26.

[0062] The handle part 40 can extend out from an approximately middle portion of one edge of the filter screen frame 36, and may be narrower than the filter screen 38 on both sides, so as to reduce the space occupied, reduce obstruction to air, and reduce the possibility of unnecessary contact with other components.

[0063] Optionally, the handle part 40 is fitted to a wall of the circulating air channel 20 and/or the door seal assembly 22.

[0064] In this way, it is beneficial to reducing or avoiding the influence of air circulation. Optionally, the handle part 40 does not extend out of the third opening 24.

[0065] In this way, it is beneficial to achieving attractive appearance and a compact structure of the laundry handling device 10, reducing the influence on other elements

of the laundry handling device 10, and avoiding that, during the operation of the laundry handling device 10, the handle part 40 is squeezed and pulled by the laundry and then the filter screen assembly 26 falls off from the mounting position.

[0066] Optionally, the size of the filter screen frame 36 is adapted to the size of the circulating air channel 20 and/or the door seal assembly 22 at the mounting position of the filter screen frame.

[0067] In this way, it is beneficial to achieving firm bonding between the filter screen frame 36 and the circulating air channel 20 and/or the door seal assembly 22, and guaranteeing the filtering area of the filter screen assembly 26.

[0068] Continue to refer to FIG. 3. optionally, the door seal assembly 22 includes an air channel 42 extending out from the third opening 24 to the direction of the circulating air channel 20 and connected to the circulating air channel 20, and the filter screen assembly 26 is at least partially received in the air channel 42.

[0069] In this way, it is beneficial to achieving attractive appearance and a compact structure of the laundry handling device 10.

[0070] The door seal assembly 22 may be in the shape of an approximate cylinder having front and rear ends open. The third opening 24 can be arranged on an upper wall portion of the door seal assembly 22, in fluid communication with the circulating air channel 20 through the air channel 42, and communicated with the circulating air channel 20 and the laundry handling container 16 through the second opening 18. The shape, structure, and size of the air channel 42 may correspond to those of the circulating air channel 20, and the air channel may have an approximately square tubular shape. The second bonding part 34 may be arranged at an end portion of the air channel 42 close to the circulating air channel 20. Accordingly, the first bonding part 32 may be arranged at the end portion of the circulating air channel 20 close to the air channel 42.

[0071] Optionally, the laundry handling device 10 includes a blower device 44 for promoting air to circulate and communicate between the circulating air channel 20 and the laundry handling container 16.

[0072] In this way, it is beneficial to promoting circulation of air inside the laundry handling device 10.

[0073] The blower device 44 may be connected to the circulating air channel 20. The portion of the circulating air channel 20 connected to the blower device 44 and the portion of the circulating air channel connected to the air channel 42 may be at a certain angle, for example, perpendicular to each other. The blower device 44 may be arranged behind the circulating air channel 20 and the door seal assembly 22. The door seal assembly 22 may be arranged below the blower device 44 and the circulating air channel 20. The laundry handling container 16 may be arranged below the blower device 44 and the circulating air channel 20, and behind the door seal assembly 22.

[0074] The various specific implementations described above and shown in the accompanying drawings are only used to illustrate the present disclosure, but do not refer to all of the present disclosure. Within the scope of the basic technical idea of the present disclosure, any form of modification made by a person skilled in the art to the present disclosure falls within the scope of protection of the present disclosure.

Claims

1. A laundry handling device (10), the device comprising:

   a case (12), comprising a first opening (14);
   a laundry handling container (16), located in the case (12), and comprising a second opening (18) corresponding to the first opening (14);
   a circulating air channel (20), in fluid communication with the laundry handling container (16);
   a door seal assembly (22), connecting the first opening (14) and the second opening (18), the door seal assembly (22) comprising a third opening (24), and the third opening (24) being in fluid communication with the circulating air channel (20); and
   a filter screen assembly (26), arranged close to the third opening (24), the filter screen assembly (26) being detachably connected to the circulating air channel (20) and/or the door seal assembly (22), so as to filter air circulating between the circulating air channel (20) and the laundry handling container (16).

2. The laundry handling device (10) according to claim 1, wherein the filter screen assembly (26) is magnetically connected to the circulating air channel (20) and/or the door seal assembly (22).

3. The laundry handling device (10) according to claim 1, wherein the circulating air channel (20) and/or the door seal assembly (22) comprises a first connecting part (28), the filter screen assembly (26) comprises a second connecting part (30) matching the first connecting part (28), one of the first connecting part (28) and the second connecting part (30) comprises a magnet, and the other of the first connecting part (28) and the second connecting part (30) comprises a magnet or a ferromagnetic metal.

4. The laundry handling device (10) according to claim 3, wherein the circulating air channel (20) comprises a first bonding part (32), the door seal assembly (22) comprises a second bonding part (34) bonded to the first bonding part (32), and the first bonding part (32) is adjacent to the first connecting part (28).

5. The laundry handling device (10) according to claim 1, wherein the filter screen assembly (26) comprises a filter screen frame (36) at least partially received in the circulating air channel (20) and/or the door seal assembly (22) and a filter screen (38) connected to the filter screen frame (36).

6. The laundry handling device (10) according to claim 5, wherein an edge portion of the filter screen (38) is fixed to the filter screen frame (36), and a middle portion of the filter screen (38) extends from the filter screen frame (36) to a circulating airflow direction.

7. The laundry handling device (10) according to claim 5, wherein the circulating air channel (20) and/or the door seal assembly (22) comprises a first connecting part (28), the filter screen assembly (26) comprises a second connecting part (30) matching the first connecting part (28), and the second connecting part (30) is arranged on the filter screen frame (36).

8. The laundry handling device (10) according to claim 5, wherein the filter screen assembly (26) comprises a handle part (40) extending from the filter screen frame (36) to the direction of the third opening (24).

9. The laundry handling device (10) according to claim 8, wherein the handle part (40) is narrower than the filter screen (38).

10. The laundry handling device (10) according to claim 8, wherein the handle part (40) is fitted to a wall of the circulating air channel (20) and/or the door seal assembly (22).

11. The laundry handling device (10) according to claim 8, wherein the handle part (40) does not extend out of the third opening (24).

12. The laundry handling device (10) according to claim 5, wherein the size of the filter screen frame (36) is adapted to the size of the circulating air channel (20) and/or the door seal assembly (22) at the mounting position of the filter screen frame.

13. The laundry handling device (10) according to claim 1, wherein the door seal assembly (22) comprises an air channel (42) extending out from the third opening (24) to the direction of the circulating air channel (20) and connected to the circulating air channel (20), and the filter screen assembly (26) is at least partially received in the air channel (42).

14. The laundry handling device (10) according to any one of claims 1 to 13, comprising a blower device (44) for promoting air to circulate and communicate between the circulating air channel (20) and the laundry handling container (16).

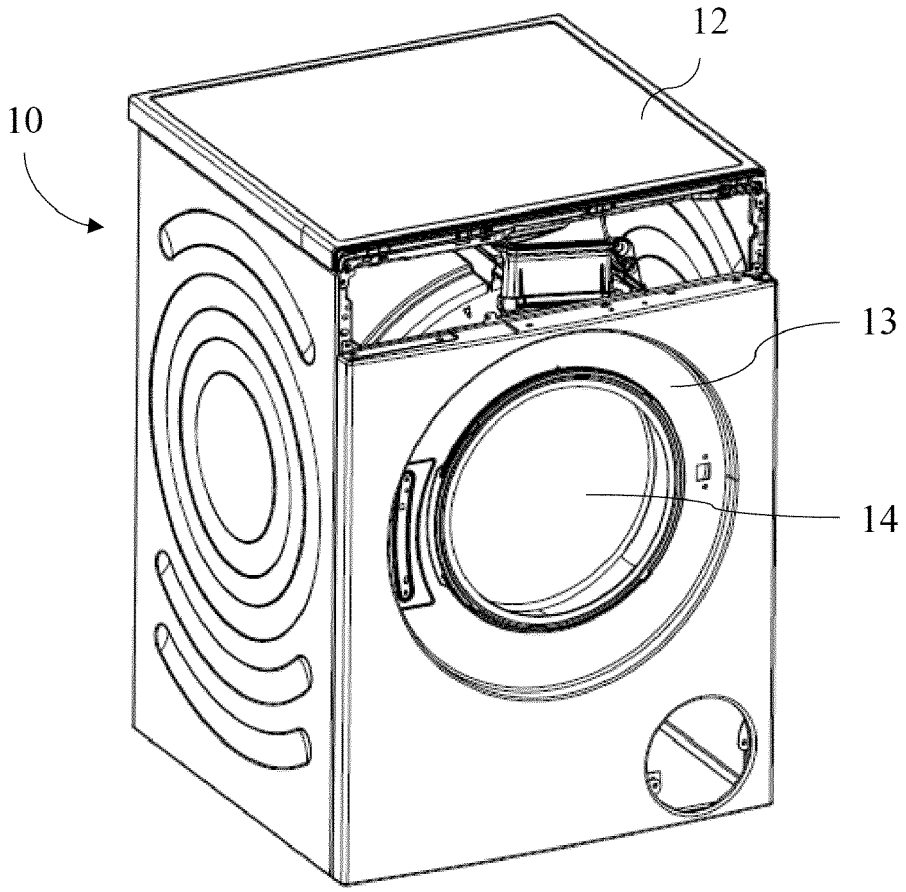

FIG. 1

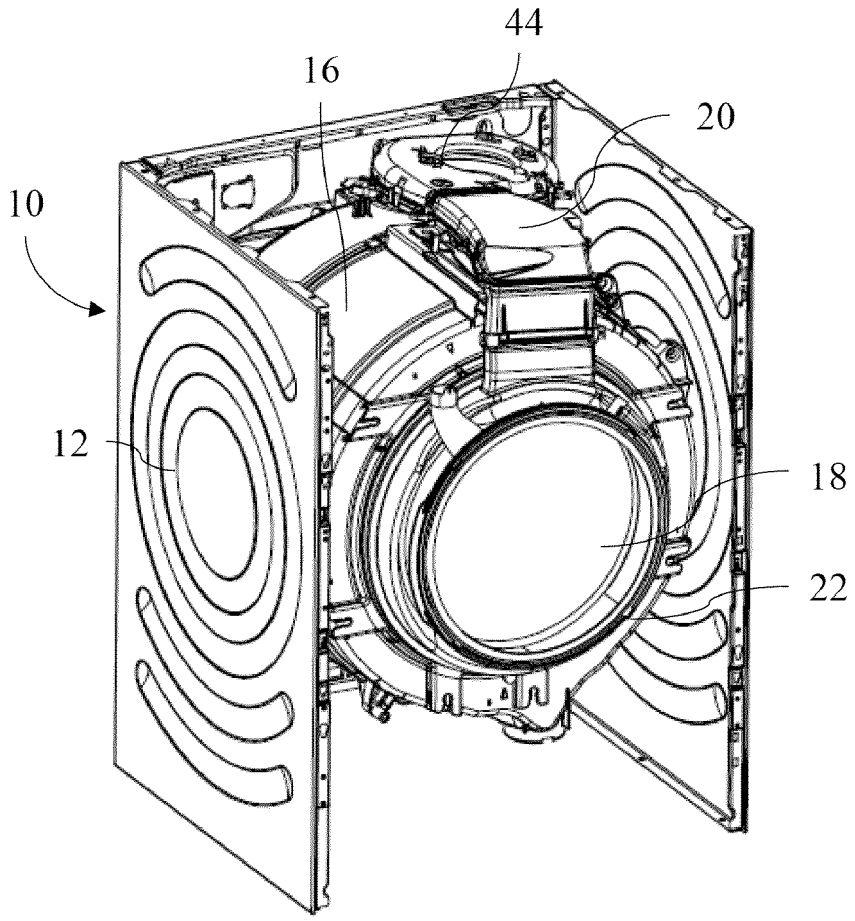

FIG. 2

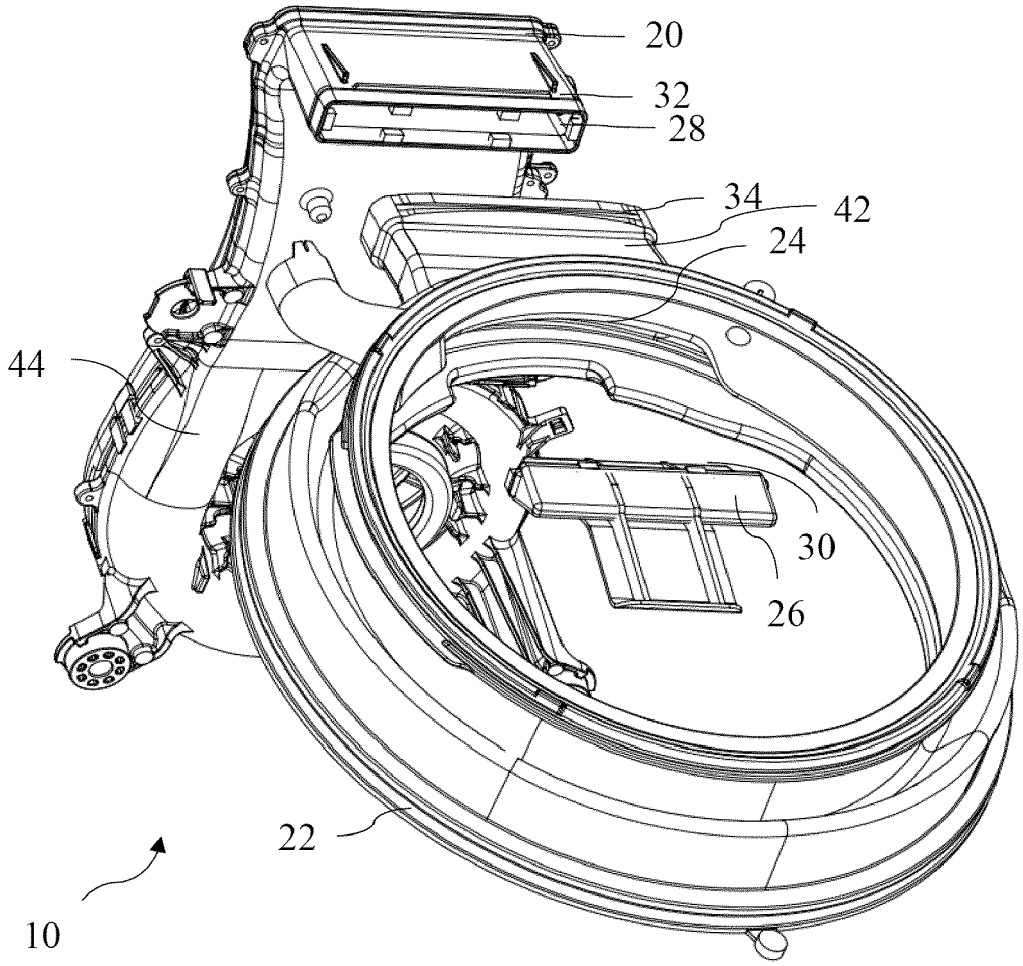

FIG. 3

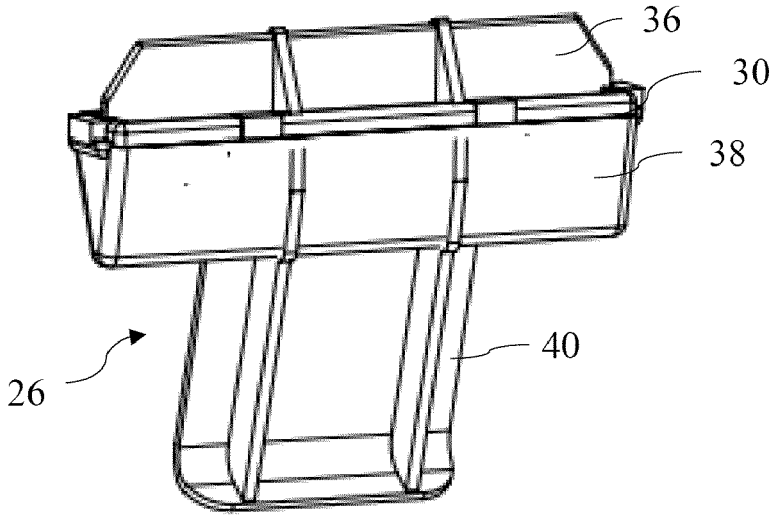

FIG. 4

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 22 20 3830

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 2 843 121 A1 (ELECTROLUX APPLIANCES AB [SE]) 4 March 2015 (2015-03-04) * paragraph [0053] - paragraph [0060]; figures *	1,5-14	INV. D06F58/22 D06F37/26 ADD. D06F25/00
X	EP 2 273 005 A2 (MIELE & CIE [DE]) 12 January 2011 (2011-01-12) * paragraph [0016] - paragraph [0018]; figures *	1,14	

TECHNICAL FIELDS SEARCHED (IPC)

D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	20 March 2023	Diaz y Diaz-Caneja

CATEGORY OF CITED DOCUMENTS

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

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
& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 20 3830

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-03-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2843121 A1	04-03-2015	NONE	
EP 2273005 A2	12-01-2011	DE 102009031097 A1	13-01-2011
		EP 2273005 A2	12-01-2011
		ES 2854978 T3	23-09-2021

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82