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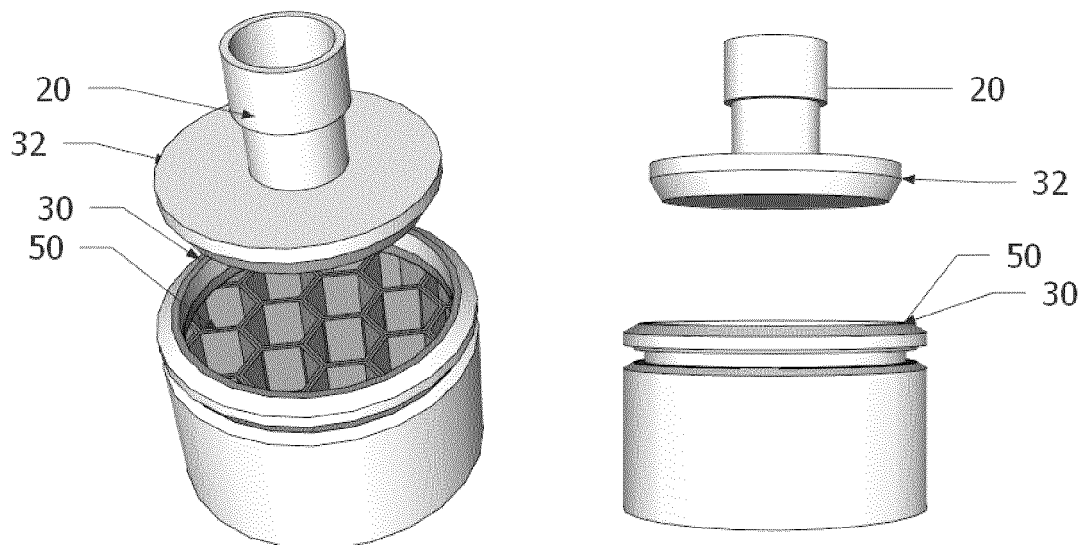
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(54) **PRESS-DEWATERING RUBBER TUB FOR CONTINUOUS WASHING MACHINE**

(57) The present invention relates to a press-dewatering rubber tub for a continuous washing machine, being configured to be movable upward or downward by a driving cylinder (20, 6B) so as to press a laundry in a dewatering tank (10, 6C), wherein a plurality of high-elastic honeycomb fillers (50) as a filler for reinforcing durability have a hollow shaped therein and are stored in the

dewatering rubber tub (30, 6A) in a state that releasing of the honeycomb fillers (50) is prevented by an outflow prevention cover (32). In this way, an amount of consumed power required for driving a driving cylinder (20, 6B) can be reduced, and the occurrence of a trouble due to a blowout of the rubber tub in a dewatering process can be prevented.

【FIG. 3】



Description

[FIELD OF THE INVENTION]

[0001] The present invention relates to a press-dewatering rubber tub for a continuous washing machine and, more specifically, to a press dewatering rubber tub for a continuous washing machine, in which a completely washed laundry is pressed to be dewatered in the continuous washing machine.

[BACKGROUND OF THE INVENTION]

[0002] As shown in FIG. 1, generally in a continuous washing machine configured by about 8-10 compartments, when laundries are continuously injected into the washing machine through one side of the machine by means of a loading conveyor (1), the laundries are washed in the process of sequentially moving to respective washing compartments (3), into which detergent has been injected, in a state of being sufficiently soaked with washing water in an immersion compartment (2), and when the laundries are completely washed, the laundries finally undergo a dewatering process in a dewatering part (6) after passing through a softening compartment (4) and a rinse compartment (5).

[0003] At this time, each of the compartments, in which immersion, washing, and rinsing are performed, has an inner structure where a rib is attached to the surface of an inner wall of a cylindrical tub thereof. Therefore, when the tub is rotated, the laundry held by the rib is moved to the upper side of the tub, so that the laundry is washed by a falling force caused while the laundry falls down from the upper side.

[0004] At this time, washing water is moved in the direction opposite to the moving direction of the laundry, thereby washing the laundry by using clean water gradually.

[0005] Meanwhile, FIG. 2 illustrates a schematic structure of a dewatering part (6). A dewatering rubber tub (6a) is pressed downward by a driving cylinder (6b) so as to press a laundry moved into a dewatering tank (6c), thereby dewatering the laundry.

[0006] However, the conventional dewatering rubber tub (6a) is filled with a predetermined amount of water (W) as an inner filler. Therefore, there is a problem that the weight of the dewatering rubber tub (6a) is increased due to the water, thereby increasing an amount of consumed power required for driving a cylinder.

[0007] In addition, when the dewatering rubber tub (6a) is blown out due to an increase in an internal pressure while being used, a high replacement cost is caused. Therefore, there is a problem of having a difficulty in maintenance of the continuous washing machine.

[0008] In order to solve this problem, utility model registration No. 20-0488262 (registration date: December 28, 2018) discloses "a press dewatering rubber tub for a continuous washing machine."

[0009] In a press dewatering rubber tub for a continuous washing machine according to utility model registration No. 20-0488262, the press dewatering rubber tub being mounted on a dewatering part, which is positioned on the rear end side of the continuous washing machine configured by a plurality of washing compartments, and being configured to be movable upward or downward by a driving cylinder so as to press a laundry in a dewatering tank, a plurality of high-elastic rubber balls as a filler for reinforcing durability have a hollow shaped therein and are stored in the dewatering rubber tub in a state that releasing of the rubber balls is prevented by an outflow prevention cover, an inner airtight force is increased while the inner airtight state of the dewatering rubber tub is formed by the outflow prevention cover, and an argon gas (g) is filled therein to prevent reduction of an elastic force of the rubber balls and prevent the rubber balls from being deformed or being oxidized.

[PRIOR ART DOCUMENT]

[0010]

(Patent document 1) Korean Utility Model Registration No. 20-0488262

(Patent document 2) Korean Patent Publication No. 10-2008-0020473

(Patent document 3) Korean Utility Model Publication No. 20-2001-0001142

[PURPOSE TO BE ACHIEVED]

[0011] The purpose of the present invention is to solve the problem as described above and is to provide a press-dewatering rubber tub for a continuous washing machine, which includes a filler filled therein, thereby reducing an amount of consumed power required for driving a cylinder by reducing the weight thereof and minimizing the occurrence of troubles.

[0012] Another object of the present invention is to provide a press-dewatering rubber tub for a continuous washing

machine, in which fillers in various shapes and types can be used as a filler filed in the dewatering rubber tub.

[MEANS FOR ACHIEVING THE PURPOSE]

[0013] In order to achieve the object described above, a press-dewatering rubber tub for a continuous washing machine according to the present invention, the press-dewatering rubber tub being mounted on a dewatering part, which is positioned on the rear end side of the continuous washing machine configured by a plurality of washing compartments, and being configured to be movable upward or downward by a driving cylinder so as to press a laundry in a dewatering tank, a plurality of high-elastic honeycomb fillers as a filler for enhancing durability have a hollow shaped therein and are stored in the dewatering rubber tub in a state that releasing of the honeycomb fillers is prevented by an outflow prevention cover.

[0014] Furthermore, in order to achieve the object described above, a press-dewatering rubber tub for a continuous washing machine according to the present invention, the press-dewatering rubber tub being mounted on a dewatering part, which is positioned on the rear end side of the continuous washing machine configured by a plurality of washing compartments, and being configured to be movable upward or downward by a driving cylinder so as to press a laundry in a dewatering tank, a plurality of high-elastic square fillers as a filler for enhancing durability have a hollow shaped therein and are stored in the dewatering rubber tub in a state that releasing of the square fillers is prevented by an outflow prevention cover.

[0015] In addition, in order to achieve the object described above, a press-dewatering rubber tub for a continuous washing machine according to the present invention, the a press-dewatering rubber tub being mounted on a dewatering part, which is positioned on the rear end side of the continuous washing machine configured by a plurality of washing compartments, and being configured to be movable upward or downward by a driving cylinder so as to press a laundry in a dewatering tank, a plurality of high-elastic cylindrical fillers as a filler for enhancing durability have a hollow shaped therein and are stored in the dewatering rubber tub in a state that releasing of the fillers is prevented by an outflow prevention cover.

[0016] As described above, a press-dewatering rubber tub for a continuous washing machine according to the present invention, high-elastic fillers, instead of water conventionally used, are used in the dewatering rubber tub, thereby obtaining an effect that the weight of the rubber tub can be reduced, an amount of consumed power required for driving a driving cylinder can be reduced, and it is possible to prevent the occurrence of a trouble due to a blowout of the rubber tub in a dewatering process.

[0017] In addition, a press-dewatering rubber tub for a continuous washing machine according to the present invention, a separate water supply device is unnecessary because water is not used as a filler, various types of fillers can be used in the dewatering rubber tub according to the kind of a laundry, and honeycomb fillers, square fillers, cylindrical fillers are mixed with each other and filled therein, thereby obtaining an effect of saving water by dewatering.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[0018]

FIG. 1 shows a schematic operation structure of a typical continuous washing machine.

FIG. 2 shows a structure of a dewatering part according to the prior art.

FIG. 3 is a partially cut-away three-dimensional view showing a state where fillers are installed in a press-dewatering rubber tub for a continuous washing machine according to a first preferred embodiment of the present invention.

FIG. 4 is a partially cut-away-three-dimensional view showing a state where fillers are installed in a press-dewatering rubber tub for a continuous washing machine according to a second preferred embodiment of the present invention.

FIG. 5 is a partially cut-away-three-dimensional view showing a state where fillers are installed in a press-dewatering rubber tub for a continuous washing machine according to a third preferred embodiment of the present invention.

[DETAILED DESCRIPTION FOR CARRYING OUT THE INVENTION]

[0019] Hereinafter, a press-dewatering rubber tub for a continuous washing machine according to a preferred embodiment of the present invention is described in detail with reference to the accompanying drawings.

<FIRST EMBODIMENT

[0020] A press-dewatering rubber tub for a continuous washing machine according to a first preferred embodiment of the present invention, the press-dewatering rubber tub (30) being mounted on a dewatering part, which is positioned on the rear end side of the continuous washing machine configured by a plurality of washing compartments, and being

configured to be movable upward or downward by a driving cylinder (20) so as to press a laundry in a dewatering tank (10), a plurality of high-elastic honeycomb fillers (50) as a filler for reinforcing durability have a hollow shaped therein and are stored in the dewatering rubber tub (30) in a state that releasing of the honeycomb fillers (50) is prevented by an outflow prevention cover (32), an inner airtight force is increased while the inner airtight state of the dewatering rubber tub (30) is formed by the outflow prevention cover (32), and one of an argon gas, water, or air is filled therein to prevent reduction of an elastic force of the honeycomb fillers (50) and prevent the honeycomb fillers (50) from being deformed or oxidized.

[0021] FIG. 3 is a partially cut-away three-dimensional view showing a state where fillers are installed in a press-dewatering rubber tub for a continuous washing machine according to a first preferred embodiment of the present invention.

[0022] As shown in FIG. 3, a press-dewatering rubber tub (30) is mounted on a dewatering part, which is positioned on the rear end side of a continuous washing machine configured by a plurality of washing compartments, and is configured to be movable upward or downward by a driving cylinder (20) driven by hydraulic or pneumatic pressure, so as to press a laundry in a dewatering tank (10).

[0023] Particularly, in the present invention, a plurality of high-elastic honeycomb fillers (50) as a filler filled in the dewatering rubber tub (30) are stored therein in a state that releasing of the honeycomb fillers (50) is prevented by an outflow prevention cover (32).

[0024] At this time, the honeycomb fillers (50) used as a filler may be formed to have a hollow honeycomb-shape (hexagonal shape).

[0025] On the other hand, the honeycomb fillers (50) can be freely installed in the dewatering rubber tub (30) in the horizontal or vertical direction.

[0026] That is, as the honeycomb fillers (50) are vertically or horizontally installed in the dewatering rubber tub (30), the rigidity of the dewatering rubber tub (30) is sufficiently maintained when the driving cylinder (20) is operated to descend.

[0027] Meanwhile, the honeycomb fillers (50), which are horizontally installed, can be installed in such a manner as to be multiple-stacked to maintain a predetermined height thereof. Accordingly, the honeycomb fillers (50) are installed at a predetermined height, thereby saving an amount of water filled in the dewatering rubber tub (30).

[0028] The dewatering rubber tub (30) according to the first embodiment of the present invention has a lightweight structure so that a press-dewatering operation can be performed to a laundry while an ascent driving is further effectively performed.

[0029] That is, at this time, in a state where the laundry is input into the dewatering tank (10), dewatering is performed by pressuring the laundry as the dewatering rubber tub (30) is moved downward by an operation of the driving cylinder (20).

[0030] The dewatering rubber tub (30) of the present invention uses the honeycomb fillers (50) as an inner filler in a pressing process for dewatering, so that the weight of a structure can be reduced in comparison with a conventional technology using water as a filler.

[0031] Therefore, the weight of the dewatering rubber tub (30) can be reduced, thereby obtaining an effect of preventing the occurrence of a trouble due to a blowout of the rubber tub in a dewatering process as well as reducing an amount of consumed power required for driving a cylinder.

[0032] Moreover, water is not used as a filler so that a separation water supply device is unnecessary, thereby obtaining an advantage of improving a problem that a laundry is stuck due to a conventional water supply device.

<SECOND EMBODIMENT>

[0033] FIG. 4 is a partially cut-away three-dimensional view showing a state where fillers are installed in a press-dewatering rubber tub for a continuous washing machine according to a second preferred embodiment of the present invention.

[0034] In a press-dewatering rubber tub for a continuous washing machine according to a second embodiment of the present invention, a dewatering rubber tub (30) and a driving cylinder (20), which are configured to be identical to those of the first embodiment described above, are described with the same name and numerical reference, and repetitive description thereof is omitted.

[0035] A press-dewatering rubber tub for a continuous washing machine according to a second preferred embodiment of the present invention, the press-dewatering rubber tub (30) being mounted on a dewatering part, which is positioned on the rear end side of the continuous washing machine configured by a plurality of washing compartments, and being configured to be movable upward or downward by a driving cylinder (20) so as to press a laundry in a dewatering tank (10), a plurality of high-elastic square fillers (60) as a filler for reinforcing durability have a hollow shaped therein and are stored in the dewatering rubber tub (30) in a state that releasing of the square fillers (60) is prevented by an outflow prevention cover (32).

[0036] In the dewatering rubber tub (30), an inner airtight force is increased while the inner airtight state is formed by the outflow prevention cover (32), and one of an argon gas, water, or air is filled therein to prevent reduction of an elastic

force of the square fillers (60) and prevent the square fillers (60) from being deformed or oxidized.

[0037] In the press-dewatering rubber tub for the continuous washing machine according to the second embodiment of the present invention, the square fillers (60) are installed in the dewatering rubber tub (30).

[0038] As shown in FIG. 4, the square fillers (60) can be installed in the dewatering rubber tub (30) in the horizontal direction as well as in the vertical direction.

[0039] Moreover, the square fillers (60) may be formed in various shapes such as a quadrate, oblong, rhombus, or oval shape.

<THIRD EMBODIMENT>

[0040] FIG. 5 is a partially cut-away three-dimensional view showing a state where fillers are installed in a press-dewatering rubber tub for a continuous washing machine according to a third preferred embodiment of the present invention.

[0041] In a press-dewatering rubber tub for a continuous washing machine according to a third embodiment of the present invention, a dewatering rubber tub (30) and a driving cylinder (20), which are configured to be identical to those of the first embodiment described above, are described with the same name and numerical reference, and repetitive description thereof is omitted.

[0042] A press-dewatering rubber tub for a continuous washing machine according to a third preferred embodiment of the present invention, the press-dewatering rubber tub (30) being mounted on a dewatering part, which is positioned on the rear end side of the continuous washing machine configured by a plurality of washing compartments, and being configured to be movable upward or downward by a driving cylinder (20) so as to press a laundry in a dewatering tank (10), a plurality of high-elastic cylindrical fillers (70) as a filler for reinforcing durability have a hollow shaped therein and are stored in the dewatering rubber tub (30) in a state that releasing of the cylindrical fillers (70) is prevented by an outflow prevention cover (32), an inner airtight force is increased while the inner airtight state of the dewatering rubber tub (30) is formed by the outflow prevention cover (32), and one of an argon gas, water, or air is filled therein to prevent reduction of an elastic force of the cylindrical fillers (70) and prevent the cylindrical fillers (70) from being deformed or oxidized.

[0043] The cylindrical fillers (70) can be installed vertically or horizontally in the dewatering rubber tub (30), and each of the cylindrical fillers (70) may include a first cylindrical filler (71) and a second cylindrical filler (72) to be filled in the dewatering rubber tub (30), wherein the first cylindrical filler (71) is formed to have the same length as that of the dewatering rubber tub (30), and the second cylindrical filler (72) is formed to have a length shorter than that of the dewatering rubber tub (30).

[0044] In the press-dewatering rubber tub for the continuous washing machine according to the third embodiment of the present invention, the press-dewatering rubber tub (30) is filled with the cylindrical fillers (70), and the press-dewatering rubber tub (30) can be filled with water or air as well as an argon gas so as to maintain an airtight space thereof.

[0045] Such an argon, gas, water, or air prevents the honeycomb fillers (50), the square fillers (60), and the cylindrical fillers (70) from being deformed or oxidized, thereby maintaining stable durability.

[0046] The present invention invented by the inventor is described above according to the embodiments. However, the present invention is not limited in the embodiments and may be variously modified within the scope without being apart from the gist thereof.

[DESCRIPTION OF REFERENCE NUMERALS]

10: Dewatering tank	20: Driving cylinder
30: Dewatering rubber tub	32: Outflow prevention cover
50: Honeycomb filler	60: Square filler
70: Cylindrical filler	

Claims

1. A press-dewatering rubber tub (30) for a continuous washing machine, which is mounted on a dewatering part positioned on a rear end side of the continuous washing machine configured by a plurality of washing compartments and is configured to be movable upward or downward by a driving cylinder (20) so as to press a laundry in a dewatering tank (10),
wherein a plurality of high-elastic honeycomb fillers (50) as a filler for enhancing durability have a hollow shaped therein and are stored in the dewatering rubber tub (30) in a state that releasing of the high-elastic honeycomb fillers (50) is prevented by an outflow prevention cover (32).

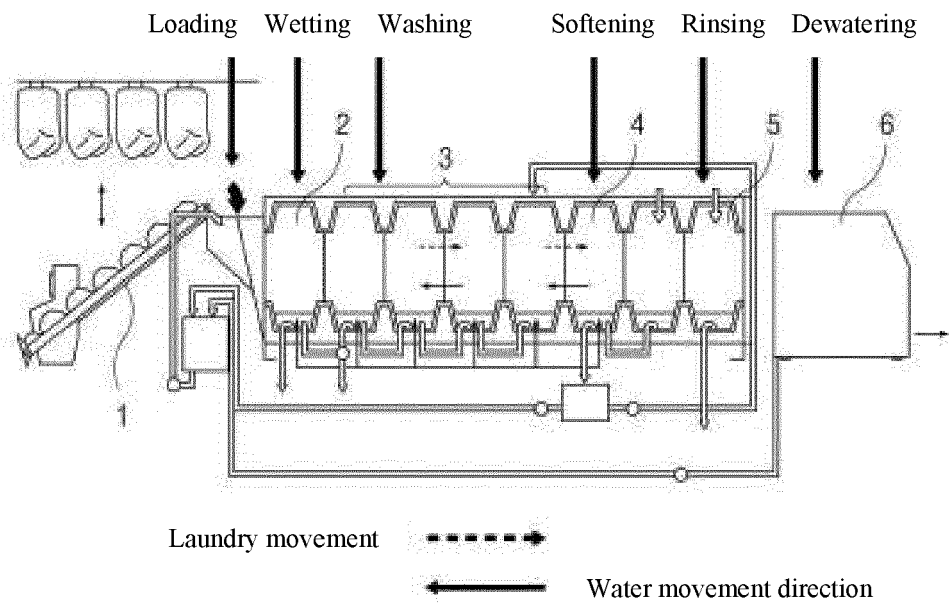
2. A press-dewatering rubber tub (30) for a continuous washing machine, which is mounted on a dewatering part positioned on a rear end side of the continuous washing machine configured by a plurality of washing compartments and is configured to be movable upward or downward by a driving cylinder (20) so as to press a laundry in a dewatering tank (10),

5 wherein a plurality of high-elastic square fillers (60) as a filler for enhancing durability have a hollow shaped therein and are stored in the dewatering rubber tub (30) in a state that releasing of the high-elastic square fillers (60) is prevented by an outflow prevention cover (32).

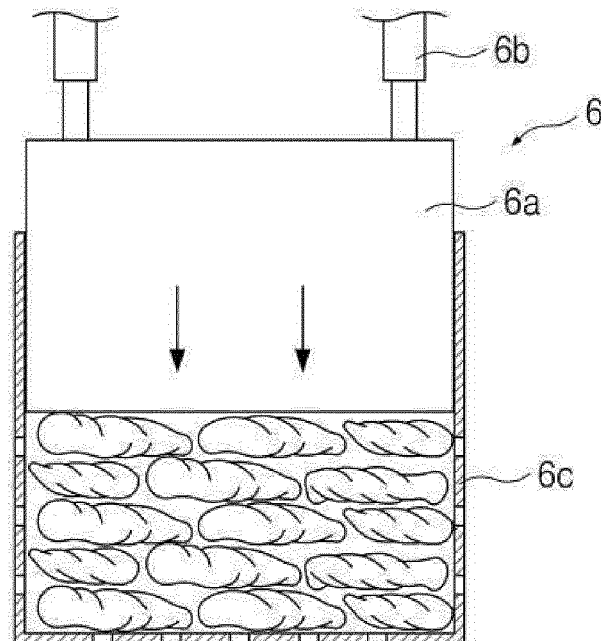
- 10 3. A press-dewatering rubber tub (30) for a continuous washing machine, which is mounted on a dewatering part positioned on a rear end side of the continuous washing machine configured by a plurality of washing compartments and is configured to be movable upward or downward by a driving cylinder (20) so as to press a laundry in a dewatering tank (10),

15 wherein a plurality of high-elastic cylindrical fillers (70) as a filler for enhancing durability have a hollow shaped therein and are stored in the dewatering rubber tub (30) in a state that releasing of the high-elastic cylindrical fillers (70) is prevented by an outflow prevention cover (32).

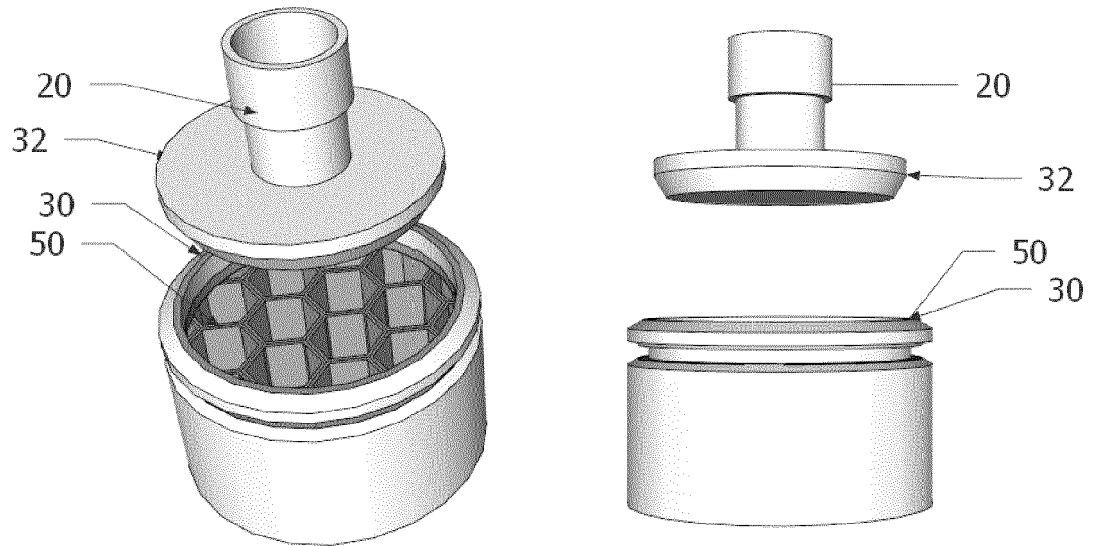
【FIG. 1】



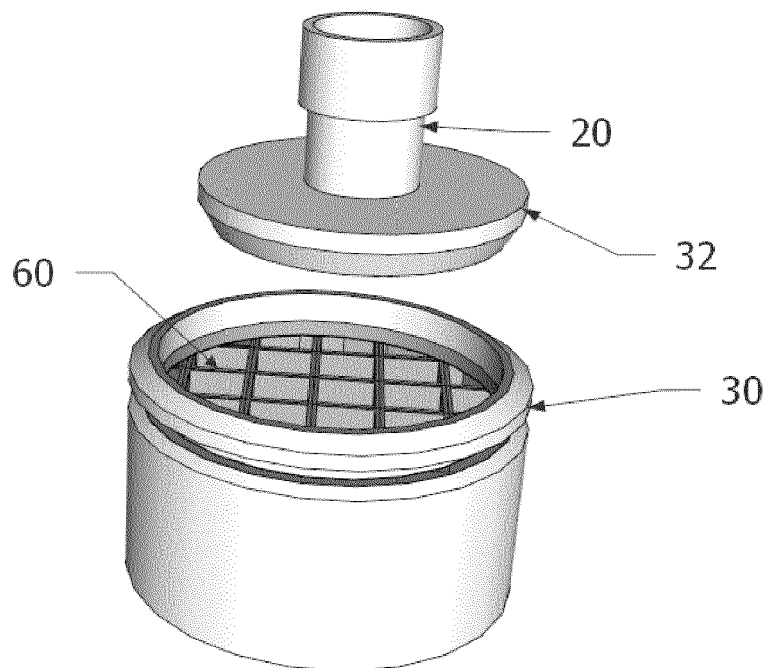
【FIG. 2】



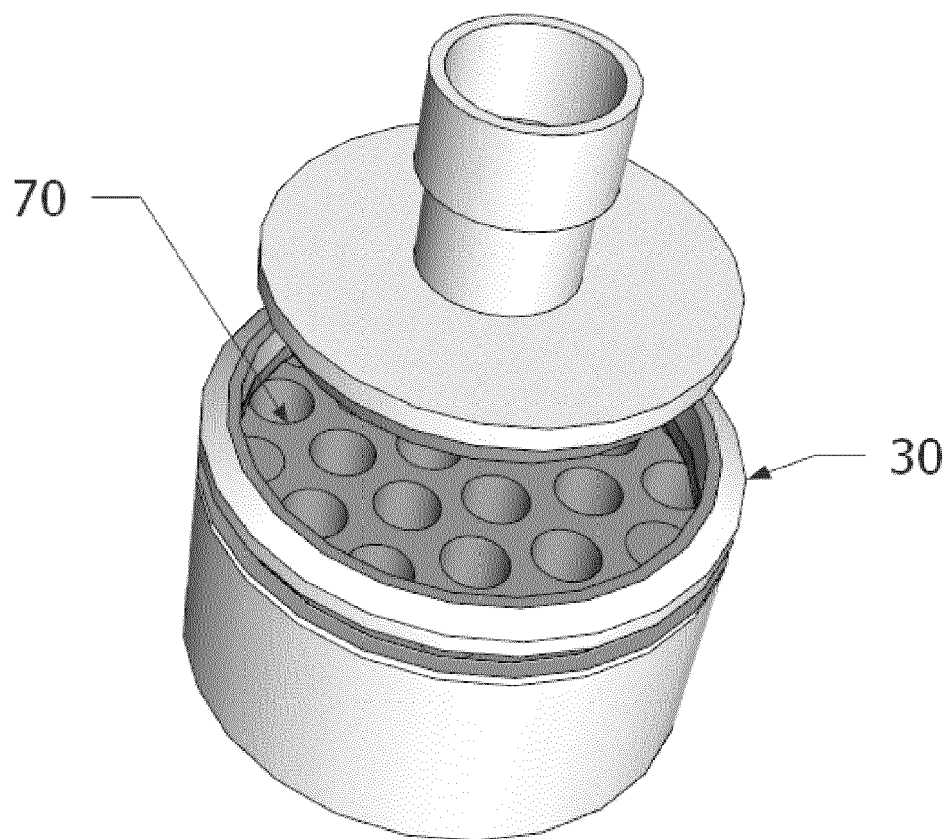
【FIG. 3】



【FIG. 4】



【FIG. 5】





EUROPEAN SEARCH REPORT

Application Number
EP 20 16 7630

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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	KR 200 488 262 Y1 (CHON B J; JEON B J) 4 January 2019 (2019-01-04) * figures 2-3 * * claim 1 * * paragraph [0022] * * paragraph [0027] * * paragraph [0032] - paragraph [0033] * * paragraph [0039] * -----	1-3	INV. D06F47/00 ADD. D06F95/00 D06F47/06
X	DE 36 05 655 A1 (XANDER GERHARD) 27 August 1987 (1987-08-27) * figure 1 * * claims 1, 5 * * column 3, line 13 - line 15 * -----	2	
A	JP H01 153196 U (-) 23 October 1989 (1989-10-23) * figures 4-5 * -----	1-3	
A	JP 2001 218998 A (INAMOTO SEISAKUSHO KK) 14 August 2001 (2001-08-14) * figure 1 * -----	1-3	TECHNICAL FIELDS SEARCHED (IPC) D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 June 2020	Examiner Werner, Christopher
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 20 16 7630

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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22-06-2020

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 200488262 Y1	04-01-2019	KR 200488262 Y1 WO 2019225833 A1	04-01-2019 28-11-2019
DE 3605655 A1	27-08-1987	NONE	
JP H01153196 U	23-10-1989	JP H0729992 Y2 JP H01153196 U	12-07-1995 23-10-1989
JP 2001218998 A	14-08-2001	JP 4373562 B2 JP 2001218998 A	25-11-2009 14-08-2001

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 200488262 A [0008] [0009]
- KR 200488262 [0010]
- KR 1020080020473 [0010]
- KR 2020010001142 [0010]