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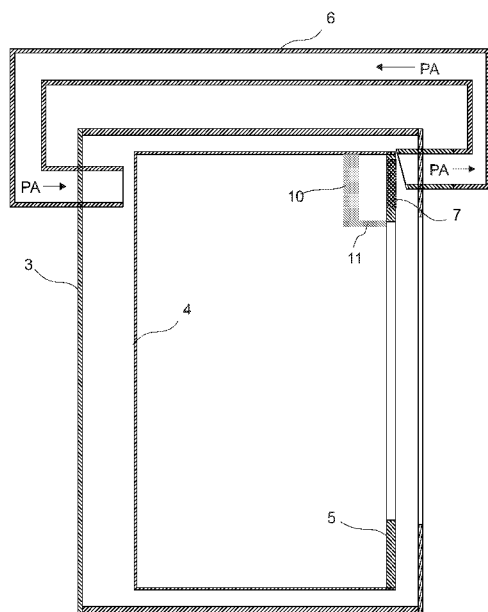
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(54) **Title:** A LAUNDRY WASHING AND DRYING MACHINE

Figure 2



(57) **Abstract:** The present invention relates to a laundry washing and drying machine (1) comprising a body (2), a tub (3) disposed in the body (2), a drum (4) that is situated inside the tub (3) and that has a front wall (5) surrounding the opening that enables loading therein, an air channel (6) wherein the circulation of the process air (PA) is realized in the drying process, one end of which is connected to the tub (3) facing the front wall (5), a filter (7) that is mounted on at least some portion of the front wall (5).

A LAUNDRY WASHING AND DRYING MACHINE

The present invention relates to a laundry washing and drying machine wherein laundry washing and drying operations are performed in the same drum.

5 In laundry washing and drying machines as in laundry dryers, lint filters are used wherein the lint that come off the laundry during the drying process are collected. In the course of time, the filters filled with lint cause the drying effectiveness to decrease and hence the lint filters have to be cleaned at certain intervals. Cleaning the filter can be performed by the user, but there are also embodiments wherein water is ejected onto the
10 filter for separating the lint as well. Cleaning the filter places a burden on the user and decreases consumer satisfaction. The embodiments wherein water is ejected onto the filter cause increase in costs and moreover bring service cost for the user in case of malfunction.

In the state of the art European Patent Application No. EP1738011, a washing and
15 drying machine is disclosed, having a plurality of holes at the front portion of the drum that open into the air channel.

In the state of the art International Patent Application No. WO2005054563, a washer/dryer is disclosed, that comprises a lint collection means wherein the lint that come off the laundry are collected.

20 The aim of the present invention is the realization of a laundry washing and drying machine, the drying effectiveness of which is increased.

The laundry washing and drying machine realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a filter that is disposed on at least a portion of the front wall of the drum
25 wherein the washing and drying operations are performed and that collects the lint that come off from the laundry. The process air that enables the laundry to be dried during the drying process leaves the drum from the front wall of the drum and meanwhile the lint that come off the laundry and mix with the process air are collected on the filter. The filter contacts with the washing water in the next washing step and thus the lint

collected thereon are transferred to the washing water. Thus, the filter is cleaned and the lint that mixes into the washing water is discharged together with the washing water.

In an embodiment of the present invention, a cut-out is opened on the front wall of the drum and the filter is joined with the front wall by being seated into the cut-out. Thus, a
5 filter is disposed on the front wall of the drum wherein the lint carried by the process air are collected and while the process air leaves the drum, the lint are filtered. The lint collected on the filter is cleaned by mixing into the washing water during the washing process.

In another embodiment of the present invention, holes are arranged on the front wall of
10 the drum so as not to hinder the flow of process air and the filter is placed on the front wall of the drum so as to be behind or at the front of the holes. The filter used in this embodiment can be a detachable filter.

In another embodiment of the present invention, the filter covers almost the entire front wall. Thus, the surface area of the filter increases and the process air cycle is prevented
15 from being interrupted by the filter being clogged during the drying process.

In another embodiment of the present invention, the filter is produced integrated with the drum front wall. Ease of production and furthermore decrease in production costs are provided by producing the filter integrated with the front wall of the drum.

In another embodiment of the present invention, the filter is produced from plastic
20 material and is preferably mounted in the cut-out on the front wall of the drum. The filter can be mounted on the front surface or on the rear surface of the perforated front wall as well.

In another embodiment of the present invention, a barrier that extends from the side surface of the drum is disposed just behind the filter for preventing the laundry inside
25 the drum from contacting the filter during the drying process. The barrier does not hinder the flow of the process air and the process air passes from the barrier and flows through the filter into the air channel that provides the circulation of the process air.

In another embodiment of the present invention, the barrier extends so as to be vertical to the lateral surface plane of the drum.

In another embodiment of the present invention, the region between the barrier and the front wall of the drum is covered by a cover. Thus, the laundry is prevented from entering between the barrier and the front wall and contacting the filter. The cover also prevents the laundry from contacting with the filter just like the barrier and the lint is prevented from sticking on the laundry.

By means of the present invention, the front wall of the drum is enabled to be used for a filter that maintains the lint collection function and thus the filter is enabled to be cleaned during the washing process.

The laundry washing and drying machine realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 – is the perspective view of a laundry washing and drying machine.

Figure 2 – is the schematic view of the tub, the drum and the air channel related to an embodiment of the present invention.

Figure 3 – is the schematic view of the tub, the drum and the air channel related to another embodiment of the present invention.

Figure 4 – is the schematic view of the tub the drum and the air channel related to yet another embodiment of the present invention.

Figure 5 – is the front view of the tub, the drum and the air channel related to yet another embodiment of the present invention.

Figure 6 – is the front view of the tub, the drum and the air channel related to yet another embodiment of the present invention.

The elements illustrated in the figures are numbered as follows:

1. Laundry washing and drying machine
2. Body
- 25 3. Tub
4. Drum
5. Front wall

- 6. Air channel
- 7. Filter
- 8. Cut-out
- 9. Hole
- 5 10. Barrier
- 11. Cover

The laundry washing and drying machine (1) comprises a body (2), a tub (3) disposed in the body (2), a drum (4) that is situated inside the tub (3) and that has a front wall (5) surrounding the opening that enables loading therein, an air channel (6) wherein the
10 circulation of the process air (PA) is realized in the drying process, one end of which is connected to the tub (3) so as to face the front wall (5). The user loads the laundry into the drum (4) and the laundry is washed and dried.

The laundry washing and drying machine (1) of the present invention comprises a filter (7) that is mounted on at least some portion of the front wall (5) wherein the lint that
15 come off the laundry during the drying process and are carried from the drum (4) by the process air (PA) flowing to the air channel (6) are collected.

In the drying process, drying is performed by passing the process air (PA) through the drum (4) by means of the air channel (6). The lint that comes off from the laundry in the drying process is mixed into the process air (PA). The process air (PA) inside the drum
20 (4) passes through the filter (7) to be delivered to the air channel (6). The process air (PA) that is dehumidified and heated in the air channel (6) is again delivered into the drum (4) preferably from the rear surface of the drum (4) and the drying process is performed in this manner. The lint that moves together with the process air (PA) inside the drum (4) are collected on the filter (7) as the process air (PA) passes through the
25 filter (7). In this way the filter (7) performs its function of filtering the lint. The filter (7) is cleaned by contacting with the washing water delivered into the drum (4) during the next washing process. The lint collected on the filter (7) are separated from the filter (7) as the drum (4) rotates during the washing process and mix into the washing water and

thereafter are discharged together with the washing water. Thus, the filter (7) is enabled to be cleaned without requiring the intervention of the user.

In an embodiment of the present invention, the laundry washing and drying machine (1) comprises a cut-out (8) that is opened on the front wall (5) and the filter (7) is integrated to the front wall (5) by being mounted into the cut-out (8). The cut-out (8) is opened on the front wall (5) of the drum (4) by using known metal cutting/processing means and the filter (7) is integrated with the front wall (5) by being seated into the cut-out (8). In this embodiment, the filter (7) that is used has a grid-like configuration so that the process air (PA) can pass through and the lint are collected (Figure 5).

10 In another embodiment of the present invention, the laundry washing and drying machine (1) comprises more than one hole (9) that is arranged on the front wall (5) and that allows the flow of the process air (PA) and the filter (7) is positioned on the front surface or the rear surface of the front wall (5) so as to be aligned with the holes (9). Holes (9) are situated on the front wall (5) of the drum (4), similar to the holes (9) on the side surface of the drum (4), through which the process air (PA) and lint contained therein can pass and the grid-like filter (7) that retains the lint is placed in front of or behind the holes (9) so as to remain inside the drum (4) or outside the drum (4). The lint is removed from the process air (PA) before or after passing through the holes (9) on the front wall (5) depending on the location of the filter (7) (Figure 3 and Figure 4).

20 In another embodiment of the present invention, the filter (7) covers almost the entirety of the front wall (5). In this embodiment, the surface area of the filter (7) is increased and with the rotation of the drum (4) during the drying process, the process air (PA) leaves the drum (4) and moves toward the air channel (6) without clogging the filter (7). Consequently, the efficiency of the drying process is increased (Figure 6).

25 In another embodiment of the present invention, the filter (7) is produced in an integrated manner with the front wall (5). The filter (7) is produced together with the drum (4) by processing the front wall (5) in a suitable manner.

In another embodiment of the present invention, the filter (7) is produced from plastic material. Thus, cost advantage is provided with this embodiment.

In another embodiment of the present invention, the laundry washing and drying machine (1) comprises a barrier (10) that is disposed just behind the front wall (5), that extends from the side surface of the drum (4) into the drum (4) and that is configured so as not to hinder the flow of the process air (PA). The barrier (10) is situated just behind
5 the front wall (5) so as to prevent the contact of the filter (7) with the laundry so that the lint accumulated on the filter (7) do not stick on the laundry during the drying process. Thus, the laundry is prevented from contacting the filter (7) on the front wall (5) during the drying process (Figure 2).

In another embodiment of the present invention, the barrier (10) is parallel to the front
10 wall (5). In this embodiment, the user is enabled to reach the filter (7) easily if the filter (7) is clogged in any way. For example, in case a washing process is not performed for a long time after the last drying process and the lint accumulated on the filter (7) dry and stick onto the filter (7), the user can reach the filter (7) and clean the filter (7) (Figure 2).

In another embodiment of the present invention, the laundry washing and drying
15 machine (1) comprises a cover (11) that covers the region between the barrier (11) and the front wall (5). In this embodiment, the laundry is prevented from entering between the barrier (11) and the front wall (5) and from contacting the lint accumulated on the filter (7) (Figure 2).

In the laundry washing and drying machine (1) of the present invention, during the
20 drying process lint are enabled to be collected by the filter (7) disposed on the front wall (5) of the drum (4) and the filter (7) is enabled to be cleaned in the next washing process by contacting with the washing water. Thus, the user is not required to control whether or not the filter (7) is clogged frequently. Moreover, cost advantage is provided with respect to embodiments where the filter (7) is cleaned by spraying water.

25

CLAIMS

- 1- A laundry washing and drying machine (1) comprising a body (2), a tub (3) disposed in the body (2), a drum (4) that is situated inside the tub (3) and that has a front wall (5) surrounding the opening that enables loading therein, an air channel (6) wherein
5 the circulation of the process air (PA) is realized in the drying process, one end of which is connected to the tub (3), facing the front wall (5), **characterized by** a filter (7) that is mounted on at least some portion of the front wall (5), wherein the lint carried by the process air (PA) flowing from the drum (4) to the air channel (6) are collected during the drying process.
- 10 2- A laundry washing and drying machine (1) as in Claim 1, **characterized by** a cut-out (8) that is opened on the front wall (5) and the filter (7) that is integrated with the front wall (5) by being mounted into the cut-out (8).
- 3- A laundry washing and drying machine (1) as in Claim 1, **characterized by** more than one hole (9) that is arranged on the front wall (5) and that allows the flow of the
15 process air (PA) and the filter (7) that is positioned on the front surface or the rear surface of the front wall (5) in alignment with the holes (9).
- 4- A laundry washing and drying machine (1) as in any one of the above claims, **characterized by** the filter (7) that covers almost the entire front wall (5).
- 5- A laundry washing and drying machine (1) as in any one of the above claims,
20 **characterized by** the filter (7) that is produced in an integrated manner with the front wall (5).
- 6- A laundry washing and drying machine (1) as in any one of the Claims 1 to 4, **characterized by** the filter (7) that is produced from plastic material.
- 7- A laundry washing and drying machine (1) as in any one of the above claims,
25 **characterized by** a barrier (10) that is disposed just behind the front wall (5), that extends from the side surface of the drum (4) into the drum (4) and that has a configuration that does not hinder the flow of the process air (PA).
- 8- A laundry washing and drying machine (1) as in Claim 7, **characterized by** the barrier (10) that is parallel to the front wall (5).

- 9- A laundry washing and drying machine (1) as in any one of the Claims 7 or 8, **characterized by** a cover (11) that covers the region between the barrier (10) and the front wall (5).

Figure 1

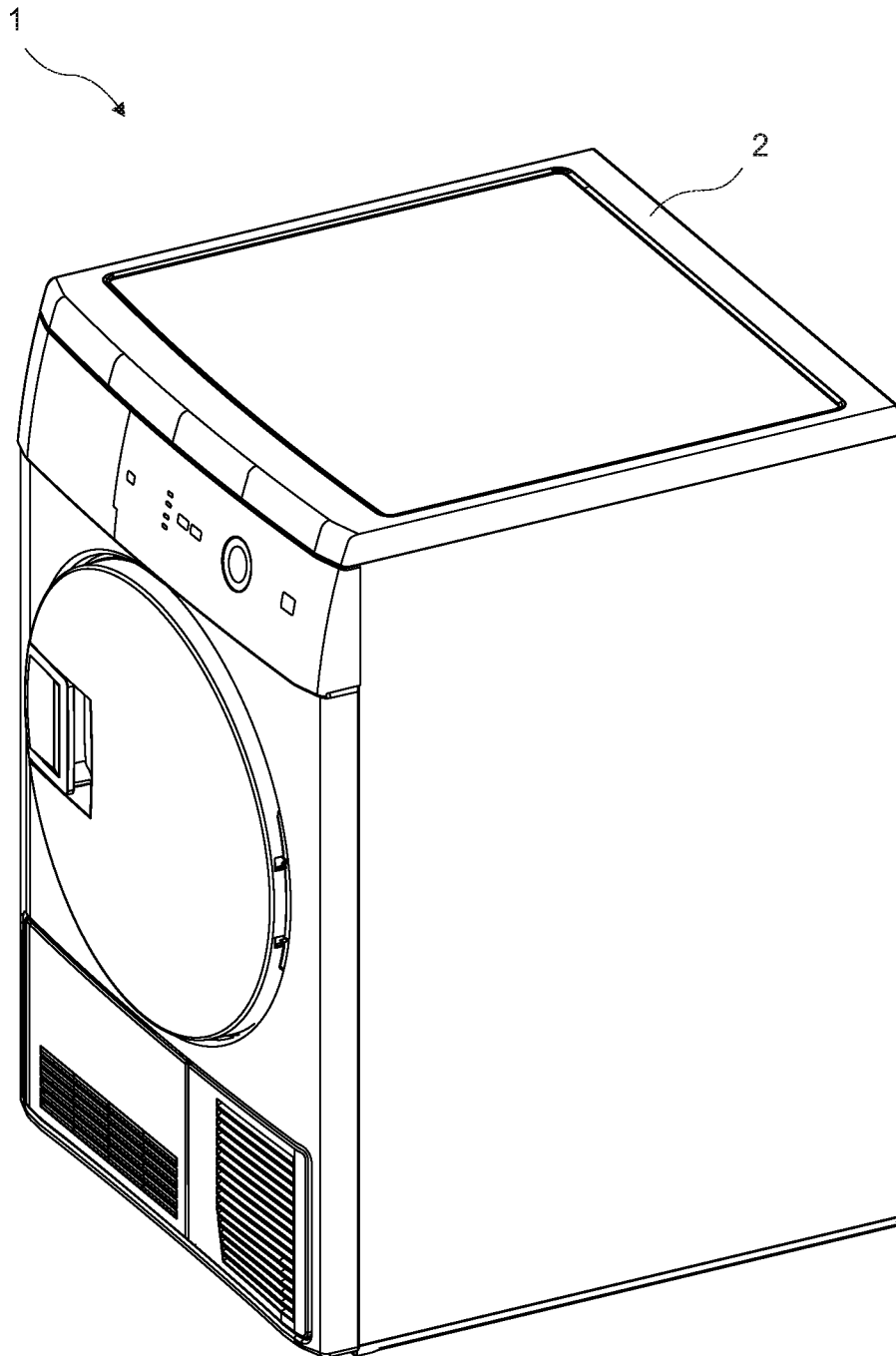


Figure 2

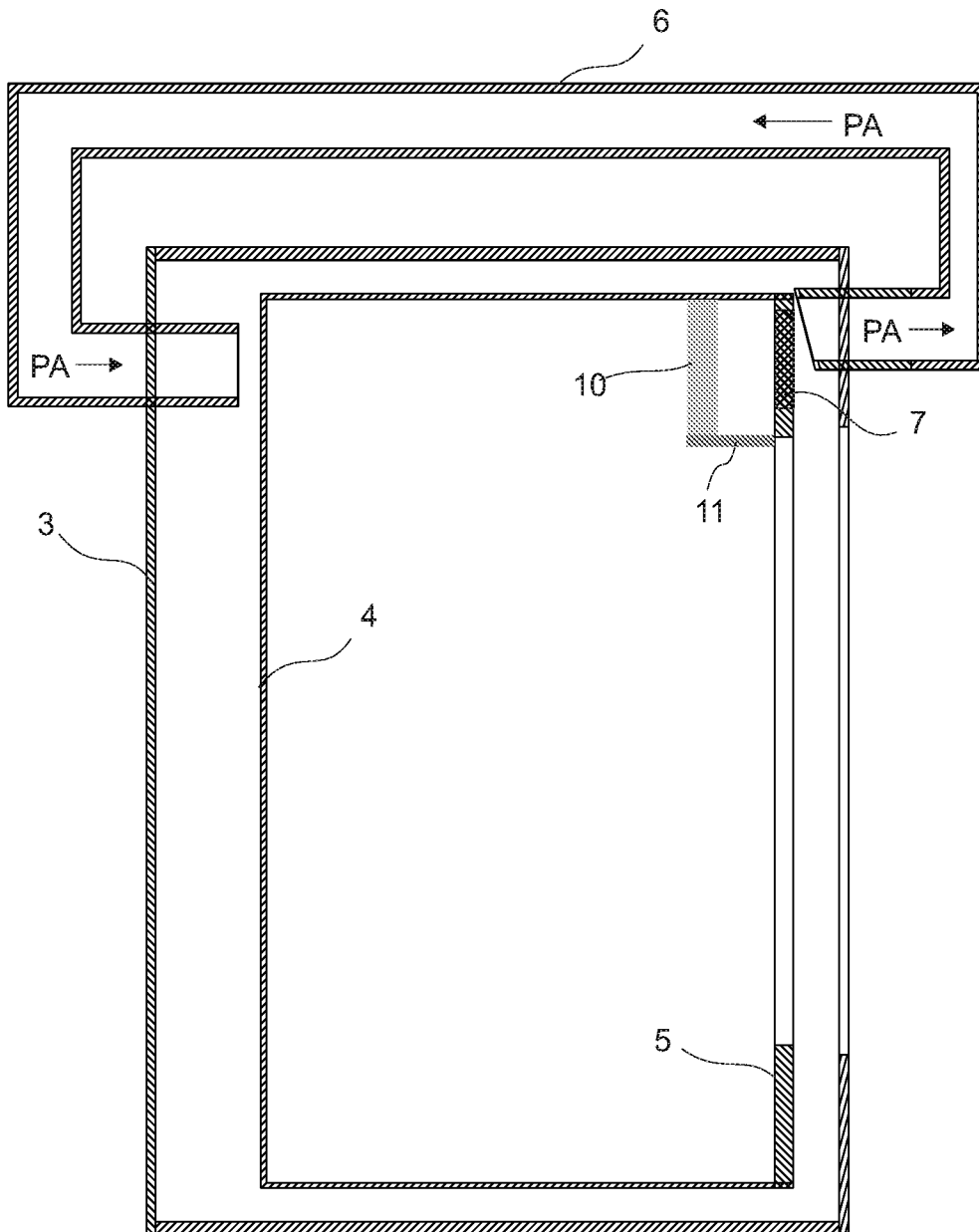


Figure 3

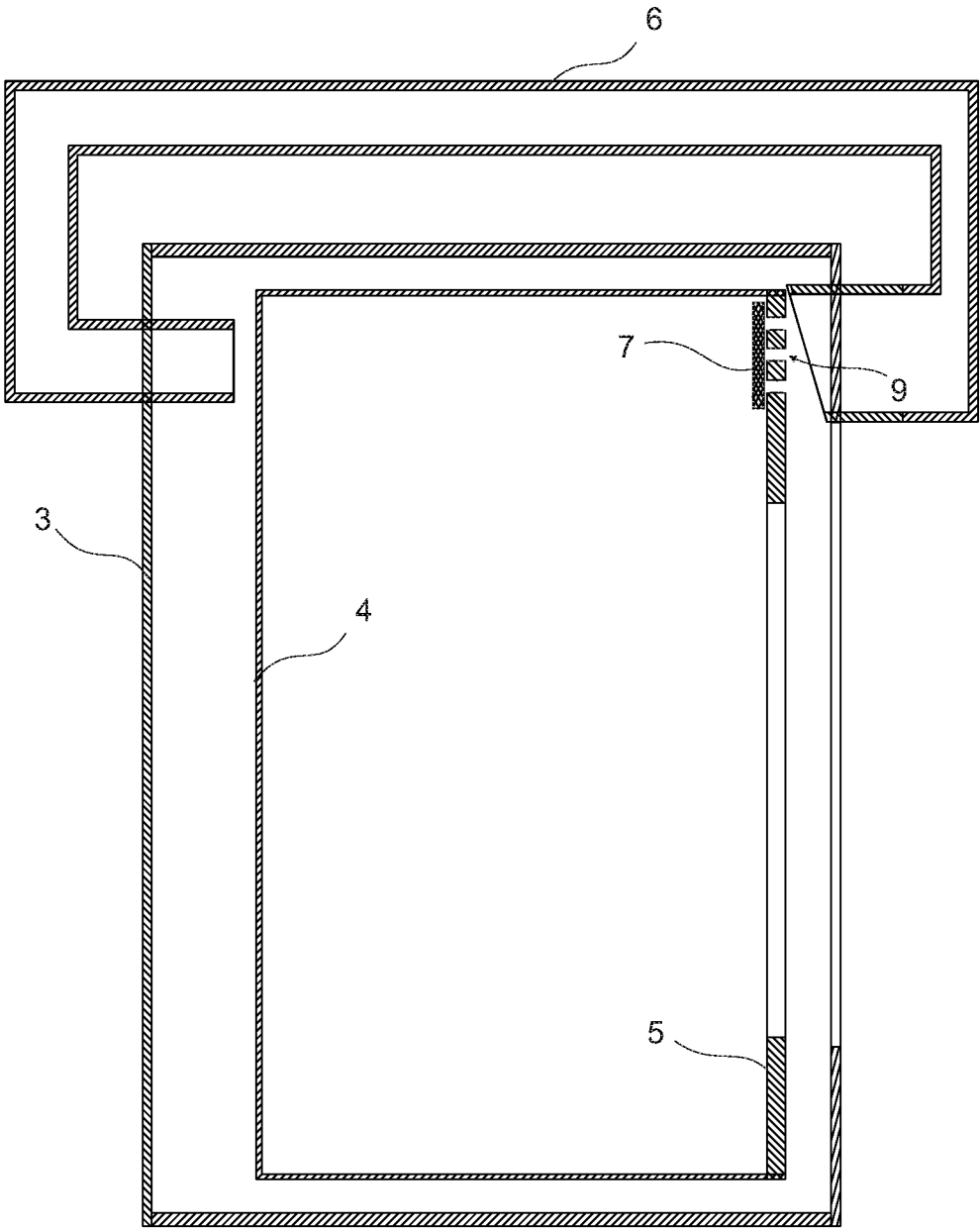


Figure 4

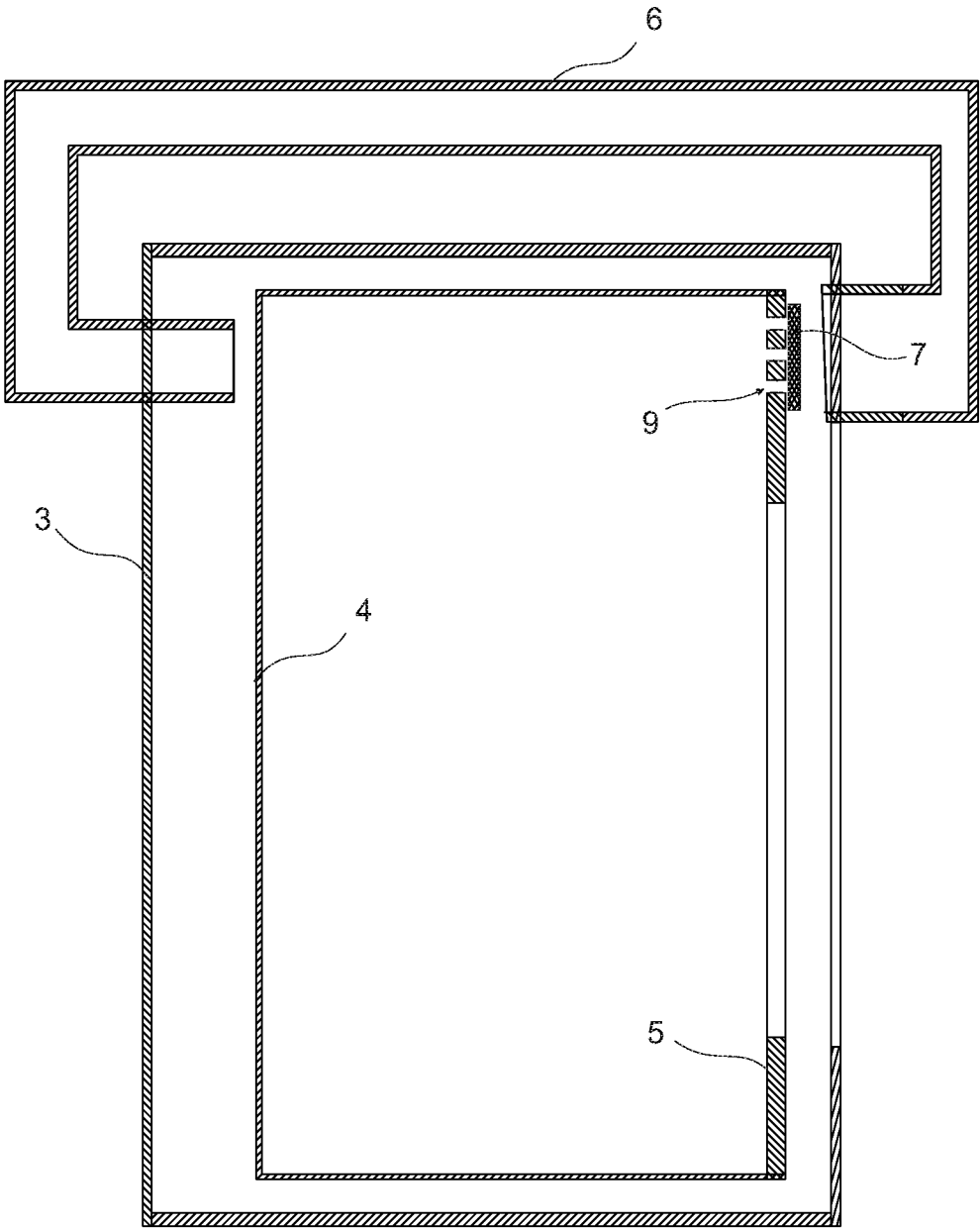


Figure 5

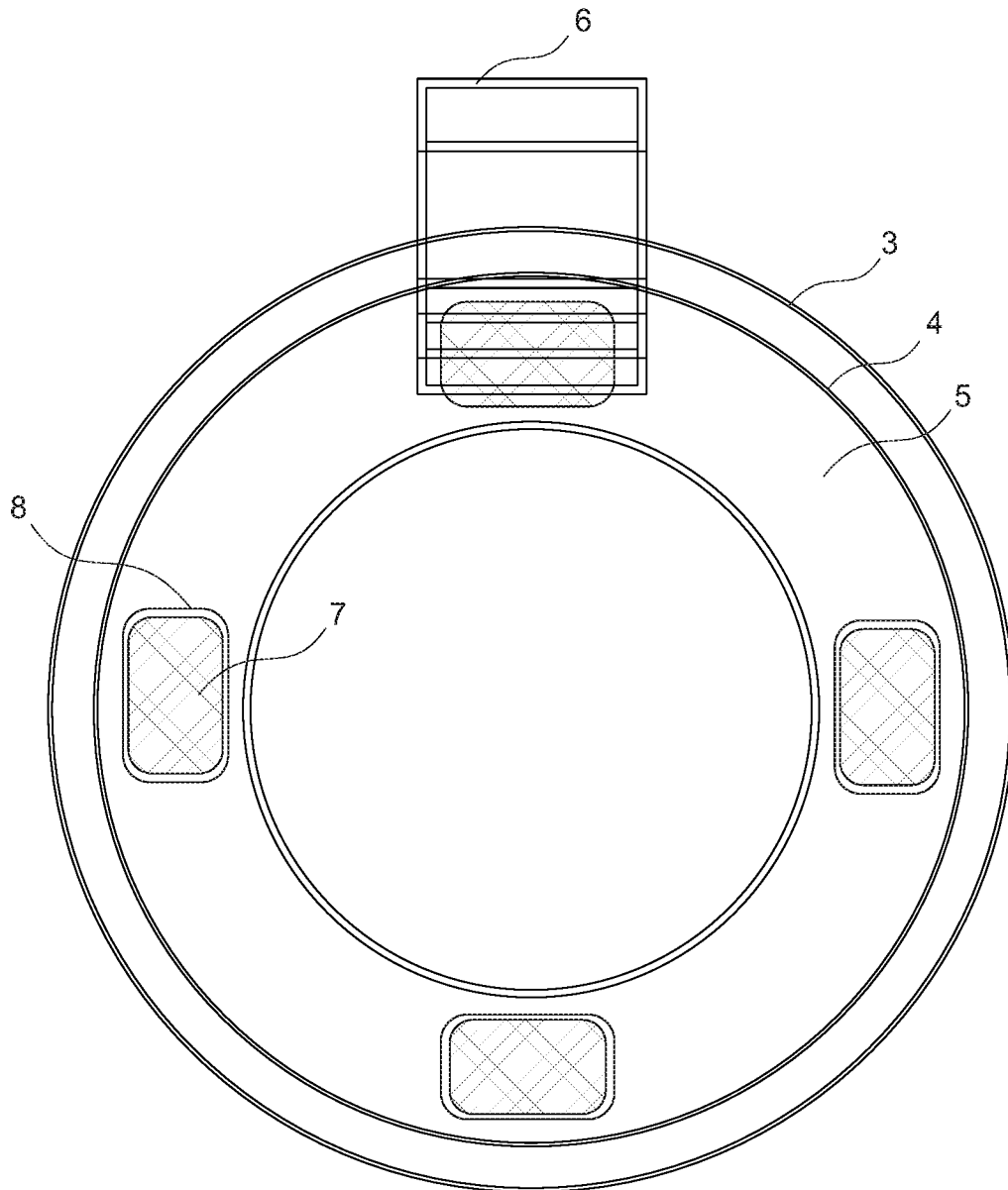
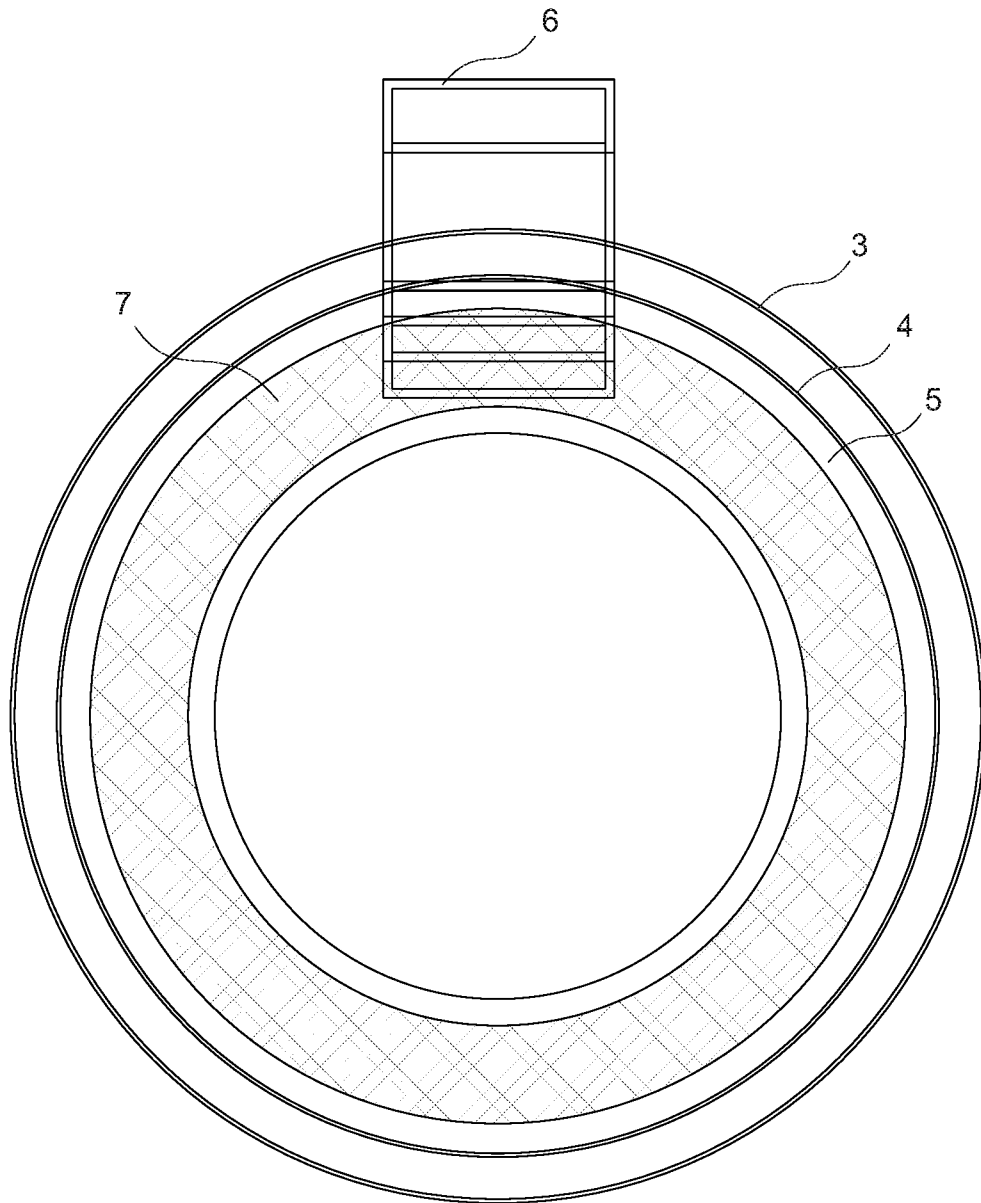


Figure 6



INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2015/050219

A. CLASSIFICATION OF SUBJECT MATTER

INV. D06F25/00 D06F58/22
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	paragraphs [0025], [0032] - [0035];	3,4,6
A	figure 2	2,7-9
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A	column 2, lines 24-67; figures 1-3 column 3, lines 29-42 column 3, line 63 - column 4, line 10	2,5,7-9
A	----- US 2 875 996 A (HULLAR HERBERT E) 3 March 1959 (1959-03-03) column 2, line 42 - column 3, line 30; figures 3, 8	1-4
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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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International application No

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