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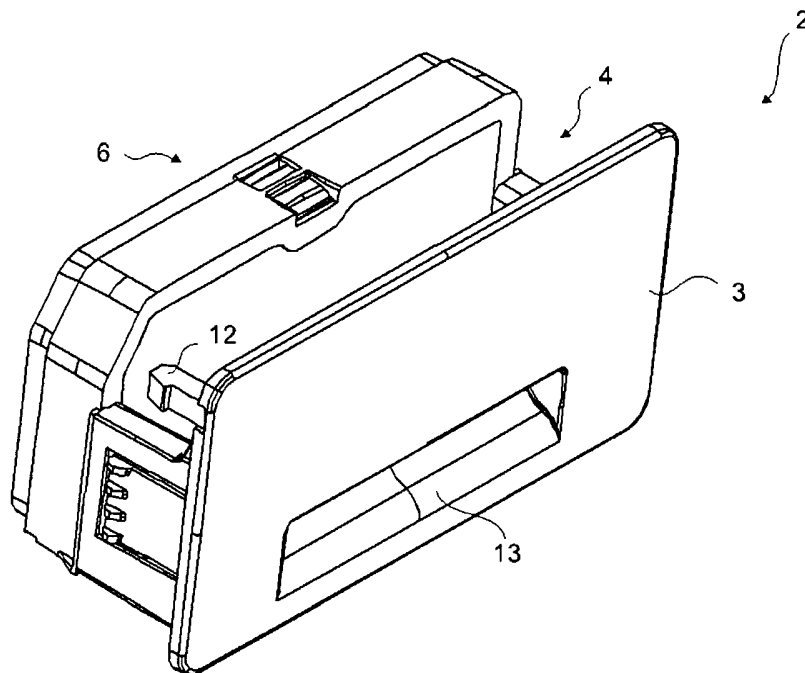
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(54) Title: A WASHER / DRYER



(57) Abstract: This invention relates to a washer / dryer (1) comprising a filter group (2) which is positioned in a housing on the path of the air flow, preferably located at the lower part of the washer / dryer (1) and which may be cleaned by being easily taken out of the washer / dryer (1) and whereby it is prevented that the fiber, lint and fluff particles etc. in the air inside the drum return to the air cycle.

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Description

A WASHER / DRYER

- [001] This invention relates to a washer / dryer comprising a filter group that traps the fiber, lint, fluff and the like in the drying air.
- [002] In dryers, the air that is heated by means of various methods is directed to the interior of the drum where the items to be dried are placed and then is sucked so as to return to the heating cycle. During the mentioned cycle of the air, it is necessary to trap the fiber, lint, fluff and the like. Therefore, various filters are developed to trap those particles. The afore-mentioned filters which are produced by utilizing different kind of materials are placed inside the dryer, at the circulation path of the air.
- [003] The said filters function by trapping the particles in the medium during the operation of the dryer. However in time, the mentioned particles in the medium accumulate on the filter located at the circulation path of the air, and these particles set an obstacle blocking the air circulation. Consequently, this blockage causes the energy consumption of the dryer to increase and the drying efficiency to decrease. For that reason, the mentioned filters should be cleaned by the user periodically.
- [004] In the current state of the art, in the United States Patent Document US 3748746, the filter group placed vertically at the side wall of the dryer is made to rotate about an axis by the user and, as a result of this rotation, the filter group moves upward and to the front and the filter located at the end of the filter group can be detached from its location by the user.
- [005] In the British Patent Document GB 2091123, yet another embodiment in the current state of the art, a description is given of a filter group comprising two arms which are connected to each other by a hinge and wherein filters are placed at the surfaces of the mentioned arms.
- [006] In the current state of the art, in the United States Patent Document US 5651188, the filter group is mounted to a lid positioned on the top panel of the dryer. If necessary, the user may open the mentioned lid and take out the filter material that is attached to the lower surface of the lid.
- [007] In another embodiment of the current state of the art, in the European Patent Document EP 1022373, a description is given of a filter group which may be taken out of the dryer by the user and, which comprises a filter placed onto a surface that can rotate about a hinge and is positioned on the intake zone where the air present in the medium surrounding the dryer, enters into the device.
- [008] The object of the present invention is the realization of a washer / dryer comprising a filter group which can easily be taken out and cleaned and, which incorporates more than one filters trapping particles at varying sizes present in the medium.

- [009] The washer/dryer designed to fulfill the objective of the present invention is illustrated in the attached figures where:
- [010] Fig.1 – is a perspective view of a washer/dryer.
- [011] Fig.2 – is a perspective view of a filter group.
- [012] Fig.3 – is a perspective view of a filter container.
- [013] Fig.4 – is a perspective view of a filter group without a filter inside as the filter container is in its open position.
- [014] Fig.5 – is a perspective view of a filter group as the filter container is in its open position.
- [015] Fig.6 – is a back perspective view of a filter group, behind that placed auxiliary filter.
- [016] Fig.7 – is a back perspective view of a filter group, behind that placed auxiliary filter and protector.
- [017] Fig.8 – is a front perspective view of a filter group, behind that placed auxiliary filter and protector.
- [018] Fig.9 – is an another embodiment perspective view of a filter group that comprising a metal holder.
- [019] Parts shown in figures are numbered as follows:
1. Washer/dryer
 2. Filter group
 3. Panel
 4. Inlet chamber
 5. Guide
 6. Filter container
 7. Lid
 8. Frame
 9. Filter
 10. Bolt
 11. Lock housing
 12. Detent
 13. Handle
 14. Auxiliary filter
 15. Protector
 16. Holder
- [020] The washer / dryer (1) which provides that the laundry placed inside is dried by rotation and by blowing hot air upon them, comprises a body, a washing tank placed inside the body, a drum located inside the said washing tank, a fan used to blow the air, preferably heated by means of a heater, into the drum and, a filter group (2) which is

positioned in a housing on the path of the air flow, preferably located at the lower part of the washer / dryer (1) and which may be cleaned by being easily taken out of the washer / dryer (1) and whereby it is prevented that the fiber, lint and fluff particles etc. in the air inside the drum return to the air cycle, wherein that air is blown onto the laundry placed in the drum by means of the fan (Figure 1 and Figure 2).

[021] The filter group (2) comprises a panel (3) whereby it is taken out of the dryer (1) by the user by hand and a filter container (6) incorporating an openable / closeable lid (7) and a frame (8) that can be attached to and detached from the mentioned panel (3) and that are fastened to each other by means of a hinge and wherein the air passage is enabled by the cavities located at their center portions and, one or more filters (9) placed at the surface of the frame (8) and / or between the frame (8) and the lid (7), covering the cavities which enable the air flow on the frame (8) and the lid (7) (Figure 5).

[022] The panel (3) comprises a handle (13) which facilitates the pulling out of the filter group (2) from the washer / dryer (1) by the user, an inlet chamber (4) between the panel (3) and the filter container (6), where the air that proceeds along the drum enters, and a guide (5) with an inclined surface so as the air that passes through the inlet chamber (4) is transferred to the filter container (6).

[023] The filter container (6) comprises a frame (8) incorporating a lock housing (11), preferably at its upper edge, that is connected to the frame (8) by a hinge and which ensures that the lid (7) does not detach in closed position unless any force is applied and, an openable / closeable lid (7) incorporating a bolt (10) that bends under the application of a force and which is in a form such that it fits to the lock housing (11) connected to the afore-mentioned frame (8) by a hinge.

[024] In an alternative embodiment of the present invention, the lock housing (11) may be located at the lid (7) whereas the bolt (10) is located at the frame (8).

[025] After placing a filter (9) between the filter container (6), the frame (8) and the lid (7), the frame (8) and the lid (7) that are connected to each other by a hinge are moved towards each other and the frame (8) is closed by the lid (7) by fitting the bolt (10) into the lock housing (11). In that case, the filter group (2) is assembled together by mounting the filter container (6) onto the panel (3).

[026] The filter group (2) comprises a detent (12) located on the panel (3) which triggers a switch as the filter group (2) is taken out of the washer / dryer (1) wherein it is ensured that the washer / dryer (1) does not operate until it is placed back in.

[027] As the washer / dryer (1) operates, drying process is performed by blowing heated air onto the laundry placed inside the drum. The air that receives the moisture of the laundry by contacting with humid clothes is routed to the filter group (2) in order to return to the air cycle. Moist air that passes through the drum is routed to the filter

container (6) via the guide (5) in the filter group (2). The air that reaches the filter container (6) is entered into the air cycle by passing through the filters (9) positioned at the surface of the frame (8) and inside the filter container (6). Depending on the frequency of operating of the washer / dryer (1), after some period of time, the filters (9) in the filter group (2) are filled with the fiber, lint and fluff particles etc. and restrain the flow of the air. In that case, the filters (9) should be cleaned.

[028] Following is the description of the cleaning procedure of the filters (9) as being taken out of the washer / dryer (1). The filter group (2) which comprises the panel (3) and the filter container (6) attached to the said panel (3) are pulled out of the washer / dryer (1) by using the handle (13) positioned at the outer surface of the panel (3). The filter container (6) is detached from the panel (3) and the particles on the synthetic filter (9), located at the frame (8), are removed. The sponge filter (9), on the other hand, located inside the filter container (6), between the lid (7) and the frame (8), can be cleaned by being taken out of the filter container (6) as the lid (7) is opened. After the sponge filter (9) is cleaned, it is placed into the filter container (6) and, the frame (8) and the lid (7) are locked together in such a way that the sponge filter (9) is between them. The filter container (6) with the sponge filter (9) inside, is mounted onto the panel (3) and the filter group (2) is attached to the washer / dryer (1). Meanwhile, the detent (12) on the panel (3) which is to trigger the switch inside the washer / dryer (1) prepares the washer / dryer (1) to be ready to use by triggering the mentioned switch.

[029] As the filter container (6) and the panel (3) may be manufactured in single piece, in the preferred embodiment of the present invention the filter container (6) incorporates the same number of projections / housings as the number of housings / projections on the filter container (6), the frame (8) and the panel (3) wherein the said projections / housings coincide with the said housings / projections in order to attach the filter container (6) to the panel (3).

[030] In another embodiment of the present invention, in the event that the sponge filter (9) is not placed accurately and properly in the filter container (6) and hence it does not function properly, the washer / dryer (1) comprises an auxiliary filter (14) that is placed downstream of the filter group (2) in the path of the air flow, preferably onto the opening present on the rear wall of the housing through which the filter group (2) is mounted on the washer / dryer (1), and a protector (15) that is placed onto the opening and against which is the auxiliary filter (14) leans, and which prevents damages to the heat source especially the heat pump during mounting/demounting of the auxiliary filter (14). The protector (15) is preferably in the form of a closely woven wire. By using the auxiliary filter (14), it is ensured that the filtering function is carried out, even if the filters (9) in the filter container (6) do not function. Furthermore, the

auxiliary filter (14) may be cleaned by the user by being easily taken out of its place (Figure 7, Figure 8 and Figure 9).

[031] Furthermore, the filter group (2) comprises one or more holder (16) formed at the side edges of the panel (3) so as they fit into the indentations formed at the side edges of the housing, wherein it is achieved that the said filter group (2) is placed to the housing inside the washer / dryer (1) and does not detach from the mentioned housing unless the user applies a force to do so.

[032] In the preferred embodiment of the present invention, holder (16) formed at the side edges of the panel (3) is produced of metal, so that it is not negatively influenced by the working conditions in the washer / dryer (1), especially heat. Holder (16), that is produced of metal, is fixed onto the panel (3) preferably by riveting (Figure 9).

[033] In the dryers (1) with a heat pump, the filter group (2) according to the present invention is placed in front of the heat pump heat exchanger.

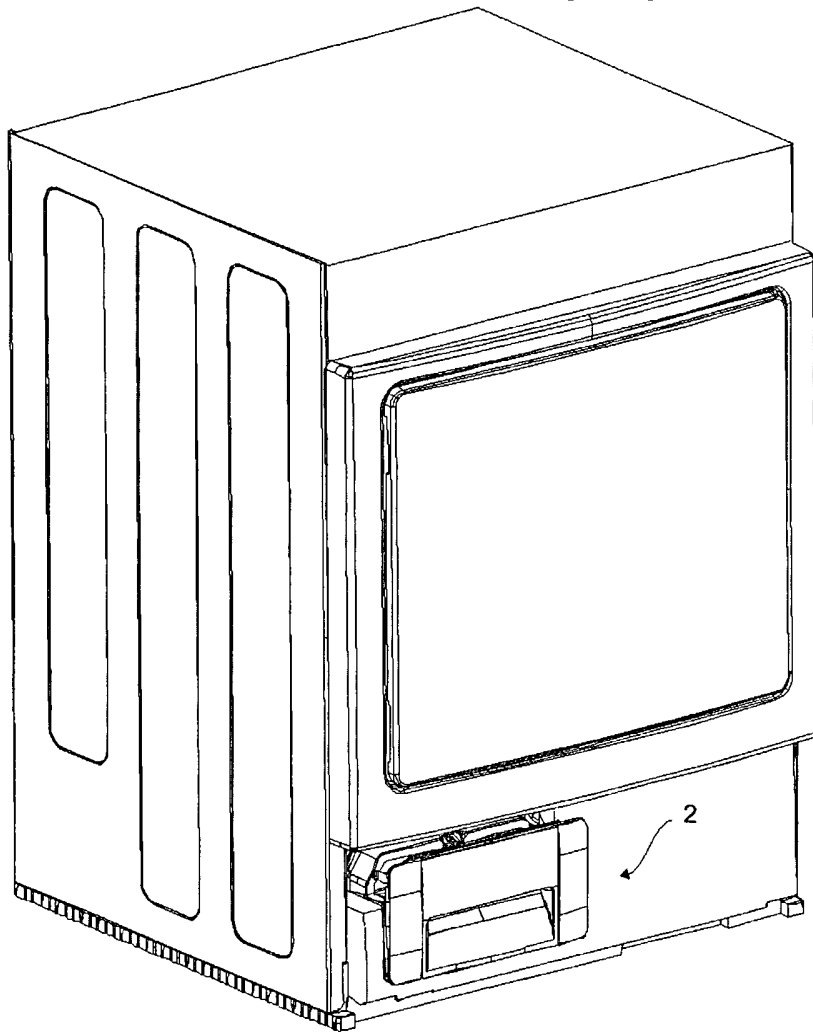
[034] The filter group (2) in accordance with the present invention may easily be taken out of the washer / dryer (1) by the user and may be attached back to the washer / dryer (1) after the filters (9) are cleaned.

Claims

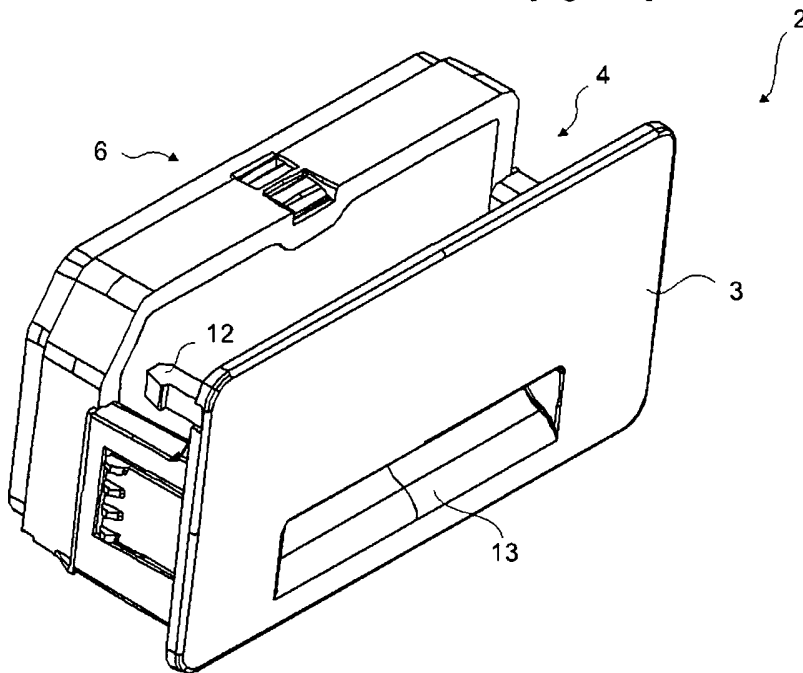
- [001] A washer / dryer (1) **characterized by** a filter group (2) positioned in a housing on the path of the air flow and may be cleaned by being easily taken out of the washer / dryer (1) and whereby it is prevented that the fiber, lint and fluff particles etc. in the air inside the drum return to the air cycle, comprising, a panel (3) whereby it is taken out of the washer / dryer (1); a filter container (6) incorporating an openable / closeable lid (7) and frame (8), that can be attached to and detached from the mentioned panel (3) and that are fastened to each other by means of a hinge and; one or more filters (9) placed at the surface of the frame (8) and / or between the frame (8) and the lid (7).
- [002] A washer / dryer (1) as described in Claim 1, **characterized by** a filter group (2) comprising a panel (3) that incorporates, a handle (13) which facilitates is the pulled out of by the user by hand; an inlet chamber (4) where the air that proceeds along the drum enters and; a guide (5) with an inclined surface so as the air that passes through the inlet chamber (4) is transferred to the filter container (6).
- [003] A washer / dryer (1) as described in Claims 1-2, **characterized by** a filter group (2) comprising a filter container (6) which incorporates a frame (8) the entire surface of which is covered by a filter (9), enabling the air to pass through.
- [004] A washer / dryer (1) as described in Claims 1-2, **characterized by** a filter group (2) comprising a filter container (6) which incorporates an openable / closeable lid (7) with a cavity at its center portion, enabling the air flow.
- [005] A washer / dryer (1) as described in Claim 3, **characterized by** a filter group (2) comprising a filter container (6) which incorporates a frame (8) with a lock housing (11) on it.
- [006] A washer / dryer (1) as described in Claim 4, **characterized by** a filter group (2) comprising a filter container (6) which incorporates a lid (7) with a bolt (10) which is to fit to the afore-mentioned lock housing (11).
- [007] A washer / dryer (1) as described in any of the above claims, **characterized by** a filter group (2) comprising a filter (9) placed between the frame (8) and the lid (7).
- [008] A washer / dryer (1) as described in any of the above claims, **characterized by** a panel (3) incorporating a detent (12) that triggers a switch whereby it is ensured that the washer / dryer (1) does not operate until the filter group (2) is placed back to its position.
- [009] A washer / dryer (1) as described in any of the above claims, **characterized by** a filter group (2) that is placed in front of the heat pump heat exchanger.

- [010] A washer / dryer (1) as described in any of the above claims, **characterized by** an auxiliary filter (14) that is placed downstream of the filter group (2) in the path of the air flow.
- [011] A washer / dryer (1) as described in Claim 10, **characterized by** an auxiliary filter (14) that is placed onto the opening present on the rear wall of the housing through which the filter group (2) is mounted.
- [012] A washer / dryer (1) as described in Claim 10, **characterized by** a protector (15) that is placed downstream of the filter group (2) in the path of the air flow and which prevents damages to the heat source especially the heat pump during mounting/demounting of the auxiliary filter (14).
- [013] A washer / dryer (1) as described in Claim 12, **characterized by** the protector (15) that is placed onto the opening present on the rear wall of the housing through which the filter group (2) is mounted.
- [014] A washer / dryer (1) as described in any of the above claims, **characterized by** the filter group (2) comprises one or more holder (16) which is formed at the side edges of the panel (3) so as they fit into the indentations formed at the side edges of the housing, wherein it is achieved that is placed to the housing and does not detach from the housing unless the user applies a force to do so.

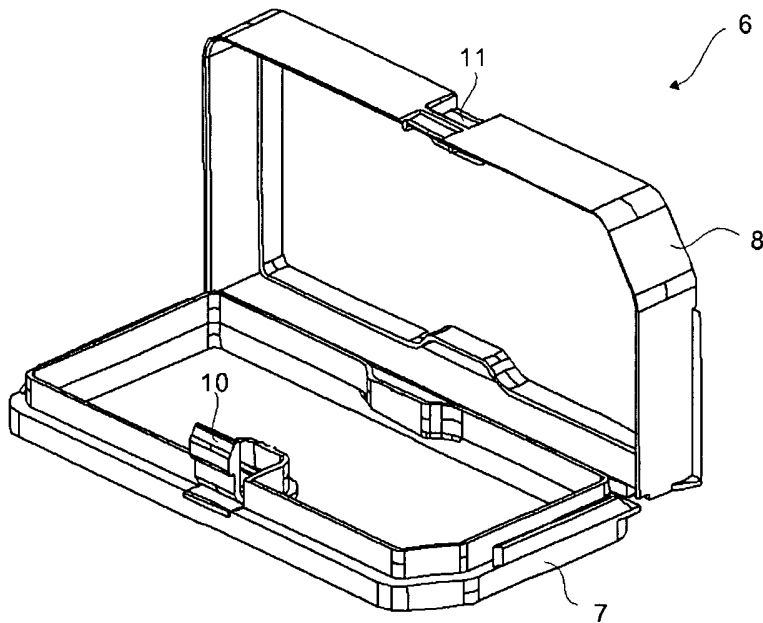
[Fig. 001]



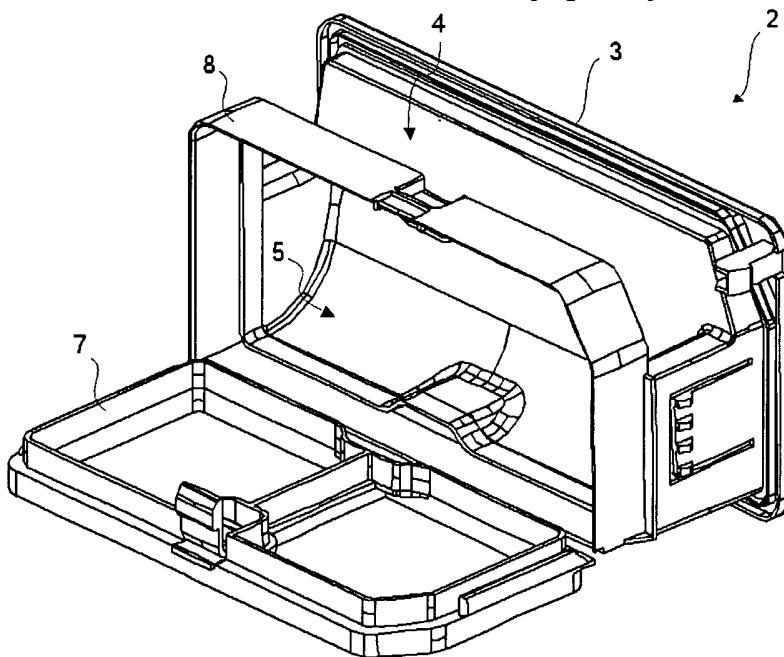
[Fig. 002]



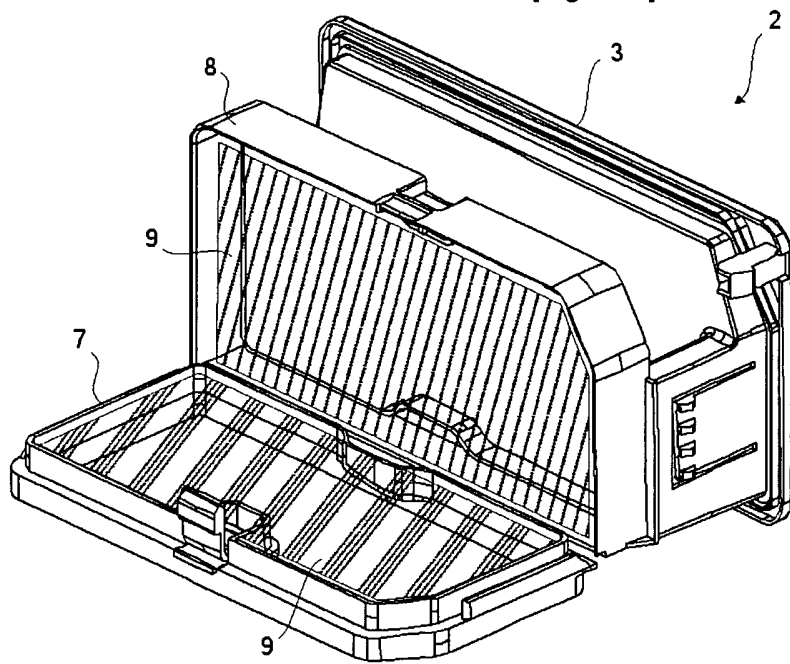
[Fig. 003]



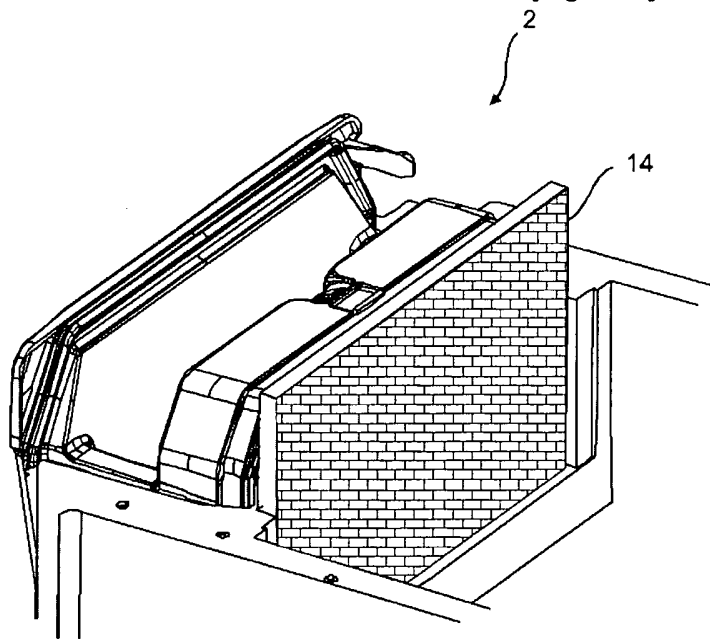
[Fig. 004]



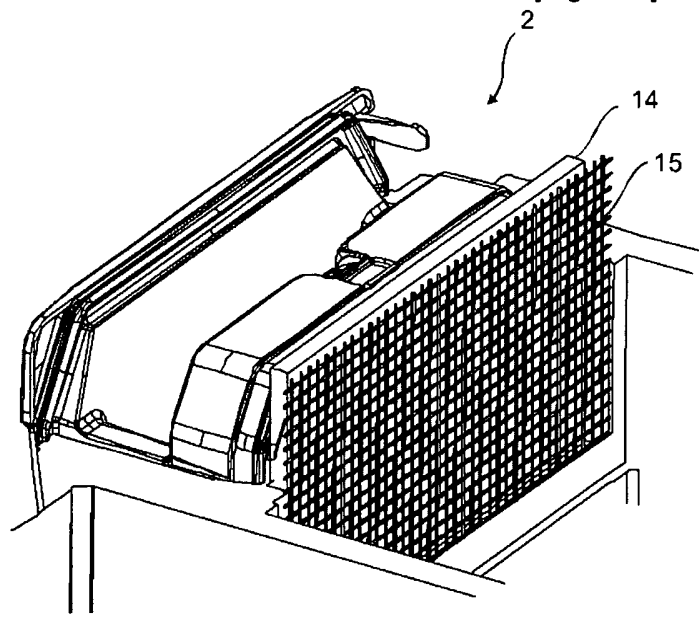
[Fig. 005]



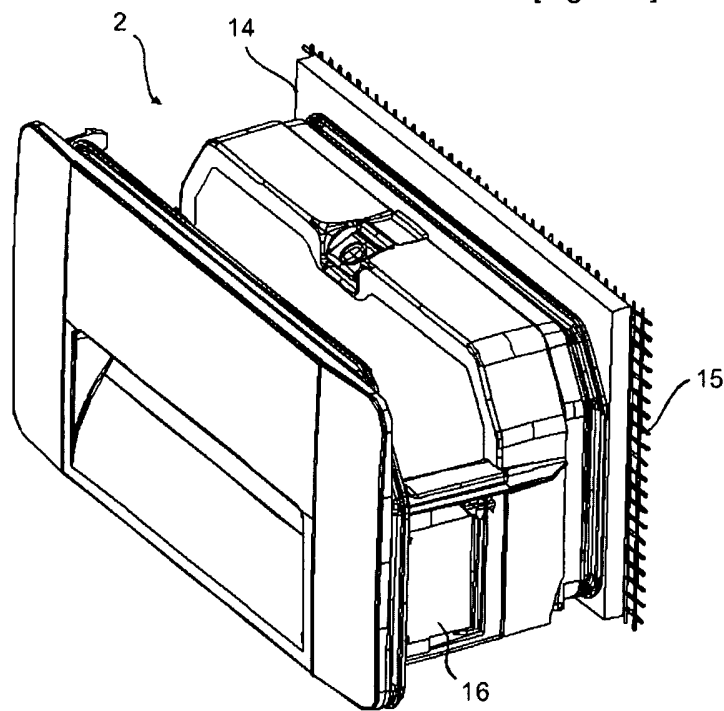
[Fig. 006]



[Fig. 007]



[Fig. 008]



[Fig. 009]

