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(54) **Laundry machine**

Waschmaschine

Machine à laver le linge

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Description

[0001] The invention relates to a laundry machine (e.g. a laundry washing machine, a laundry drier, a laundry washer/drier), comprising a door to open and close an inner space of the machine, wherein the door comprises at least one frame and at least one transparent window held by the frame which window allows to inspect the inner space when the door is closed.

[0002] Laundry machines of this kind are well known in the art. Laundry dryers for instance have a drum for receiving the laundry which has to be dried as an inner space. The drum is closable by a door which is hinged at the housing of the dryer. To allow the inspection of the laundry during the operation of the dryer the door comprises a transparent window which allows the observation of the inner of the dryer.

[0003] Normally, in a laundry drier a lint filter is arranged in the bottom region of the door. Furthermore, the door must be sealed by means of a gasket.

[0004] EP 2 103 729 A1 discloses a drum washing machine including a lid formed of a lid unit, having a transparent window through which a user can monitor the laundry from the outside, and a transparent lid cover for covering the lid unit. Multiple engaging tabs protruding rearward are provided to the rear face around the periphery of the lid cover, and multiple engagement stopper holes for receiving the engaging tabs and elastically engaging the tabs with engaging sections provided to the lid unit for preventing the tabs from slipping off. The tabs and the holes form multiple fixed sections which fit and fix the lid cover to the lid unit. Parts of the surface of the lid cover correspond to at least the fixed sections are shaped such that the parts at least refract or disperse the light from the inside when the light transmits through the lid cover.

[0005] Thus, it is an object of the invention to propose a solution by which it becomes possible in an easy, effective and economical way to hide selected parts of the door to avoid the visibility of parts in the inner space and thus to improve the design of it.

[0006] The solution of this object is characterized in that the door comprises at least one intransparent cover element adapted to partially conceal a region of the inner space, so that only a part of the inner space is inspectable or visible from the external side or outside when the door is closed.

[0007] The cover element can have the shape of a segment of a circle. It can have a shape congruent to the at least one window.

[0008] The cover element is preferably affixed to the frame and/or to the window by connection means, wherein the connection means are preferably a glueing, a welding, a screw connection or a snap connection.

[0009] In a further embodiment the cover element may be also a layer of paint which may be sprayed or applied to the transparent window in such a way to partially conceal a region of the inner space of the laundry machine, so that only a part of the inner space is inspectable from

the outside when the door is closed.

[0010] The door can have an inner transparent window and an outer transparent window. The at least one cover element can be arranged between the inner and the outer transparent window. It can be clamped in the mounted state of the door between the inner and the outer transparent window. The inner transparent window is preferably made of glass; the outer transparent window is preferably made of plastic material.

[0011] In a further embodiment the cover element may be also a layer of paint which may be sprayed or applied to the inner transparent window and/or outer transparent window.

[0012] The frame can comprise an inner and an outer frame element. The inner and outer frame elements can be connected by connection means. Those connection means are preferably screw connection means or snap connection means or a welding or a glueing.

[0013] The frame can further comprise an alignment element for aligning the cover element relatively to the frame. The alignment element can comprise a pin element arranged at the frame or at the cover element which pin element cooperates with a notch arranged in the cover element or in the frame.

[0014] The cover element can be made of plastic material or metal, preferably aluminium, or a combination of plastic and metal.

[0015] The cover element covers only partially the transparent window. Preferably between 3 % and 25 %, specifically preferred between 5 % and 15 %, of the total visible area of the window is covered by the cover element. The covered area of the window is preferably the bottom area of the window.

[0016] The invention thus regards the measure that the door comprises a non-transparent cover adapted to partially occlude the transparent region of the door, so that a part of the internal space of the laundry machine is concealed and thus cannot be seen from the external side of the laundry machine.

[0017] The laundry machine may be for example a domestic laundry dryer. Preferably the inner space is delimited by or situated within a rotating drum of the domestic laundry dryer.

[0018] In the drawings embodiments of the invention are depicted.

FIG 1 shows in perspective view a laundry dryer according to the invention, wherein a door of the dryer is closed,

FIG 2 shows in perspective view the dryer according to FIG 1, wherein the door of the dryer is open,

FIG 3 shows in an exploded view the door of the dryer according to a first embodiment of the invention,

FIG 4 shows a front view onto a part of the door, wherein only a frame element and a cover is

shown,

FIG 5 shows schematically a cross sectional view through the door according to a second embodiment of the invention and

FIG 6 shows schematically a cross sectional view through the door according to a third embodiment of the invention.

[0019] In FIG 1 and FIG 2 a laundry dryer 1 as an example of a laundry machine the invention refers to is shown. However it is clear that the invention may be applied without particular modifications also to other laundry machines, for example to a laundry washing machine, a laundry washer/drier, etc.

[0020] Advantageously, a laundry machine according to the invention comprises a housing containing a rotatable drum in which the laundry to be processed (e.g. washed and/or dried) can be loaded/unloaded via an opening obtained in the housing. The laundry machine according to the invention comprises also a door by which the opening in the housing of the laundry machine can be opened or closed to allow or to prevent access to the inner space of the machine. The door comprises at least one frame and at least one transparent window, held by the frame, which allows to inspect the inner space when the door is closed.

[0021] With reference to the embodiment of the invention illustrated in the enclosed figures, in which the laundry machine is a laundry drier 1, the latter comprises a door 2 by which an opening in the housing (or casing) 13 of the dryer can be opened or closed to allow or to prevent access to the inner space 3 of the dryer 1 which is delimited by a rotating drum 8.

[0022] The door 2 comprises a transparent window 5. By the window 5 it is possible to inspect the inner space 3 of the dryer 1 when the door 2 is closed during the operation of the dryer. As can be seen in FIG 2 a lint filter 10 is advantageously arranged in the bottom region of the opening which is closed by the door 2. Also a gasket 9 advantageously surrounds this opening.

[0023] It is disadvantageous that the lint filter 10 as well as the gasket 9 is visible during the operation of the dryer 1 and when the laundry which is in the drum is inspected.

[0024] Thus, according to the invention the door 2 comprises an intransparent cover element 6. This cover element is adapted to only partially conceal a region of the inner 3 of the dryer 1, so that only a part of the inner 3 is inspectable from the external when the door 2 is closed. In the example illustrated in the enclosed Figures, in which the laundry machine of the invention is a laundry drier, the view onto the lint filter 10 as well as onto the gasket 9 is advantageously hindered by the cover element.

[0025] A specific design of the door 2 is depicted in FIG 3 where an exploded view of the door 2 is shown. As can be seen the door 2 preferably comprises an outer

transparent window 5" which preferably is made of plastic material. Furthermore, it preferably has an inner transparent window 5' which is preferably made of glass. The two windows 5', 5" are fixed one another preferably by an inner and an outer frame element 4' and 4". The two frame elements 4', 4" form a frame 4 which holds the window 5. Preferably, the frame elements 4', 4" consist of plastic material; they are adapted to be fixed on another by suitable connection means (e. g. by screws, by welding, by glueing or by a snap fitting). Advantageously the frame element 4' may be made as a two-piece element. One of the pieces has the hinge 12 for arranging the door at the housing of the dryer 1, specifically at a casing 13 (see FIG 5 and FIG 6). This design is in fact not mandatory.

[0026] The cover element 6 can be made of plastic material or of metal (aluminium is preferred in this case), or of a combination of plastic and metal.

[0027] In the example of FIG 3 the cover element has the shape of a segment of a circle which is arranged in the bottom region of the window 5, i. e. it covers the bottom part of the same and thus makes it intransparent. The lint filter 10 as well as the gasket 9 in the bottom region of the door is covered consequently.

[0028] To make sure that the cover part 6 is correctly positioned in the door and to facilitate the assembly process the frame 4 and the cover element 6 are equipped with alignment elements 7 as can be seen in FIG 4. Here, the cover element 6 has for example a notch 11 (compare with FIG 3) in which a pin element can be inserted during assembly which is arranged at the frame element 4". So a quick and secure mounting of the cover element 6 is ensured.

[0029] FIG 5 and FIG 6 show two similar designs of the door 2 of the dryer which are depicted only schematically. Again, the frame element 4 advantageously comprises two frame elements 4' and 4"; also the window 5 advantageously comprises the inner window 5' and the outer window 5". The cover element 6 is placed here between the outer and inner windows 5', 5"; the cover element 6 is clamped together with the windows 5', 5" by the two frame elements 4', 4". By exerting a clamping pressure (with not shown fixation means) the whole arrangement is fixed. Specifically, the cover element 6 is fixed when the frame 4 is mounted.

[0030] However, the cover element 6 can also be applied by other means, for example by glueing, by welding, with fastening means (bolts, nuts) or by a snap fitting connection. Alternatively, the cover element 6 may be applied also externally to one of the windows 5', 5".

[0031] In a further embodiment the cover element may be also a layer of paint which may be sprayed or applied to the inner transparent window and/or outer transparent window.

[0032] There can be also more than one cover element 6. Preferably, the cover element 6 is totally or at least partially countershaped to one or to both of the windows 5', 5".

[0033] In the embodiment of FIG 5 and FIG 6 the cover element 6 is adapted to conceal the lower part of the gasket 9 which ensures the airtight closure of the door 2.

[0034] The cover element 6 may be advantageously also shaped and/or arranged in such a way to conceal other parts of the internal of the dryer, for example the lint filter 10 which is arranged in a seat 14 which in turn is connected with an air duct 15.

[0035] As can be seen in FIG 5 and in FIG 6 the door 2 is advantageously arranged at the housing (or casing) 13 of the dryer 1.

[0036] Thus, the door 2 comprises at least one cover element 6 adapted to partially conceal a region of the internal of the dryer, so that only a part of the internal is inspectable from the external when the door is closed.

[0037] So, the invention simplifies the design and the assembly process of a laundry machine with the result to hide parts of the window glass effectively and cost efficient.

Reference Numerals

[0038]

- 1 Laundry machine, Dryer (domestic dryer)
- 2 Door
- 3 Inner space
- 4 Frame
- 4' Inner Frame Element
- 4" Outer Frame Element
- 5 Window
- 5' Inner Window
- 5" Outer Window
- 6 Cover Element
- 7 Alignment element
- 8 Drum
- 9 Gasket
- 10 Lint Filter
- 11 Notch
- 12 Hinge
- 13 Casing/Housing

- 14 Seat for Lint Filter
- 15 Air Duct

Claims

1. Laundry machine (1), comprising a door (2) to open and close an inner space (3) of the machine (1), wherein the door (2) comprises at least one frame (4) and at least one transparent window (5) held by the frame (4) which window (5) allows to inspect the inner space (3) when the door (2) is closed,
characterized in that
the door (2) comprises at least one intransparent cover element (6) adapted to partially conceal said at least one transparent window (5) in such a way that a region of the inner space (3) of said laundry machine (1) is concealed, and only a part of the inner space (3) is inspectable from the outside when the door (2) is closed.
2. Laundry machine according to claim 1, **characterized in that** the cover element (6) has the shape of a segment of a circle.
3. Laundry machine according to claim 1 or 2, **characterized in that** the cover element (6) has a shape congruent to the at least one window (5).
4. Laundry machine according to one of claims 1 to 3, **characterized in that** the cover element (6) is affixed to the frame (4) and/or to the window (5) by connection means, wherein the connection means are preferably a glueing, a welding, a screw connection or a snap connection.
5. Laundry machine according to one of claims 1 to 4, **characterized in that** the door (2) has an inner transparent window (5') and an outer transparent window (5").
6. Laundry machine according to claim 5, **characterized in that** the at least one cover element (6) is arranged between the inner and the outer transparent window (5', 5").
7. Laundry machine according to claim 6, **characterized in that** the at least one cover element (6) is clamped in the mounted state of the door (2) between the inner and the outer transparent window (5', 5").
8. Laundry machine according to one of claims 5 to 7, **characterized in that** the inner transparent window (5') is made of glass and/or **characterized in that** the outer transparent window (5") is made of plastic material.

9. Machine according to one of claims 5 to 8, **characterized in that** the frame (4) comprises an inner and an outer frame element (4', 4'') adapted to be fixed on another and holding said at least one transparent window (5).
10. Machine according to claim 9, **characterized in that** the inner and an outer frame element (4', 4'') are connected by connection means.
11. Laundry machine according to claim 10, **characterized in that** the connection means are screw connection means or snap connection means or a welding or a glueing.
12. Laundry machine according to one of claims 1 to 11, **characterized in that** the frame (4) comprises an alignment element (7) for aligning the cover element (6) relatively to the frame (4).
13. Laundry machine according to claim 12, **characterized in that** the alignment element (7) comprises a pin element arranged at the frame (4) or at the cover element (6) which pin element cooperates with a notch arranged in the cover element (6) or in the frame (4).
14. Laundry machine according to one of claims 1 to 13, **characterized in that** the cover element (6) is made of plastic material or metal, or a combination of plastic and metal.
15. Laundry machine according to one of claims 1 to 3 wherein said cover element (6) comprises a layer of paint sprayed or applied to said transparent window (5).

Patentansprüche

1. Waschmaschine (1), die eine Tür (2) zum Öffnen und Schließen eines Innenraums (3) der Maschine (1) umfasst, wobei die Tür (2) zumindest einen Rahmen (4) und zumindest ein transparentes Fenster (5) umfasst, das vom Rahmen (4) gehalten wird, wobei das Fenster (5) ermöglicht, den Innenraum (3) zu inspizieren, wenn die Tür (2) geschlossen ist, **dadurch gekennzeichnet, dass** die Tür (2) zumindest ein nicht-transparentes Abdeckelement (6) umfasst, das so ausgelegt ist, dass es das zumindest eine transparente Fenster (5) derart teilweise verdeckt, dass ein Bereich des Innenraums (3) der Waschmaschine (1) verdeckt wird und nur ein Teil des Innenraums (3) von außen inspizierbar ist, wenn die Tür (2) geschlossen ist.
2. Waschmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** das Abdeckelement (6) die

Form eines Segments eines Kreises aufweist.

3. Waschmaschine nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** das Abdeckelement (6) eine dem zumindest einen Fenster (5) entsprechende Form aufweist.
4. Waschmaschine nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** das Abdeckelement (6) durch ein Verbindungsmittel am Rahmen (4) und/oder am Fenster (5) befestigt ist, wobei das Verbindungsmittel vorzugsweise eine Klebung, Schweißung, Schraubverbindung oder Schnappverbindung ist.
5. Waschmaschine nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Tür (2) ein transparentes inneres Fenster (5') und ein transparentes äußeres Fenster (5'') aufweist.
6. Waschmaschine nach Anspruch 5, **dadurch gekennzeichnet, dass** das zumindest eine Abdeckelement (6) zwischen dem transparenten inneren und äußeren Fenster (5', 5'') angeordnet ist.
7. Waschmaschine nach Anspruch 6, **dadurch gekennzeichnet, dass** das zumindest eine Abdeckelement (6) im befestigten Zustand der Tür (2) zwischen das transparente innere und äußere Fenster (5', 5'') geklemmt ist.
8. Waschmaschine nach einem der Ansprüche 5 bis 7, **dadurch gekennzeichnet, dass** das transparente innere Fenster (5') aus Glas gebildet ist und/oder **dadurch gekennzeichnet, dass** das transparente äußere Fenster (5'') aus Kunststoffmaterial gebildet ist.
9. Maschine nach einem der Ansprüche 5 bis 8, **dadurch gekennzeichnet, dass** der Rahmen (4) ein inneres und ein äußeres Rahmenelement (4', 4'') umfasst, die so ausgelegt sind, dass sie aufeinander befestigt werden und das zumindest eine transparente Fenster (5) halten.
10. Maschine nach Anspruch 9, **dadurch gekennzeichnet, dass** das innere und ein äußeres Rahmenelement (4', 4'') durch ein Verbindungsmittel verbunden sind.
11. Waschmaschine nach Anspruch 10, **dadurch gekennzeichnet, dass** das Verbindungsmittel ein Schraubverbindungsmittel oder ein Schnappverbindungsmittel oder eine Schweißung oder eine Klebung ist.
12. Waschmaschine nach einem der Ansprüche 1 bis 11, **dadurch gekennzeichnet, dass** der Rahmen

(4) ein Ausrichtungselement (7) zum Ausrichten des Abdeckelements (6) in Bezug auf den Rahmen (4) umfasst.

13. Waschmaschine nach Anspruch 12, **dadurch gekennzeichnet, dass** das Ausrichtungselement (7) ein Stiftelement umfasst, das am Rahmen (4) oder am Abdeckelement (6) angeordnet ist, wobei das Stiftelement mit einer Kerbe zusammenwirkt, die im Abdeckelement (6) oder im Rahmen (4) angeordnet ist.

14. Waschmaschine nach einem der Ansprüche 1 bis 13, **dadurch gekennzeichnet, dass** das Abdeckelement (6) aus Kunststoffmaterial oder Metall oder einer Kombination aus Kunststoff und Metall gebildet ist.

15. Waschmaschine nach einem der Ansprüche 1 bis 3, wobei das Abdeckelement (6) eine Anstrichschicht umfasst, die auf das transparente Fenster (5) gesprüht oder aufgetragen ist.

Revendications

1. Machine à laver le linge (1), comprenant une porte (2) pour ouvrir et fermer un espace interne (3) de la machine (1), la porte (2) comprenant au moins un cadre (4) et au moins une fenêtre transparente (5) maintenue par le cadre (4), laquelle fenêtre (5) autorise l'inspection de l'espace interne (3) lorsque la porte (2) est fermée,

caractérisée par le fait que

la porte (2) comprend au moins un élément de cache non transparent (6) apte à dissimuler partiellement ladite au moins une fenêtre transparente (5) d'une manière telle qu'une région de l'espace interne (3) de ladite machine à laver le linge (1) est dissimulée et seule une partie de l'espace interne (3) peut être inspectée depuis l'extérieur lorsque la porte (2) est fermée.

2. Machine à laver le linge selon la revendication 1, **caractérisée par le fait que** l'élément de cache (6) a la forme d'un segment d'un cercle.

3. Machine à laver le linge selon l'une des revendications 1 ou 2, **caractérisée par le fait que** l'élément de cache (6) a une forme coïncidant avec la au moins une fenêtre (5).

4. Machine à laver le linge selon l'une des revendications 1 à 3, **caractérisée par le fait que** l'élément de cache (6) est fixé au cadre (4) et/ou à la fenêtre (5) par des moyens de liaison, les moyens de liaison étant, de préférence, un encollage, une soudure, une liaison par vis ou une liaison à encliquetage.

5. Machine à laver le linge selon l'une des revendications 1 à 4, **caractérisée par le fait que** la porte (2) a une fenêtre transparente interne (5') et une fenêtre transparente externe (5'').

6. Machine à laver le linge selon la revendication 5, **caractérisée par le fait que** le au moins un élément de cache (6) est agencé entre les fenêtres transparentes interne et externe (5', 5'').

7. Machine à laver le linge selon la revendication 6, **caractérisée par le fait que** le au moins un élément de cache (6) est serré dans l'état monté de la porte (2) entre les fenêtres transparentes interne et externe (5', 5'').

8. Machine à laver le linge selon l'une des revendications 5 à 7, **caractérisée par le fait que** la fenêtre transparente interne (5') est faite de verre et/ou **caractérisée par le fait que** la fenêtre transparente externe (5'') est faite de matière plastique.

9. Machine selon l'une des revendications 5 à 8, **caractérisée par le fait que** le cadre (4) comprend un élément de châssis interne et un élément de cadre externe (4', 4'') aptes à être fixés l'un sur l'autre et maintenant ladite au moins une fenêtre transparente (5).

10. Machine selon la revendication 9, **caractérisée par le fait que** l'élément de châssis interne et un élément de châssis externe (4', 4'') sont reliés par des moyens de liaison.

11. Machine à laver le linge selon la revendication 10, **caractérisée par le fait que** les moyens de liaison sont des moyens de liaison par vis ou des moyens de liaison à encliquetage ou une soudure ou un encollage.

12. Machine à laver le linge selon l'une des revendications 1 à 11, **caractérisée par le fait que** le cadre (4) comprend un élément d'alignement (7) pour aligner l'élément de cache (6) par rapport au cadre (4).

13. Machine à laver le linge selon la revendication 12, **caractérisée par le fait que** l'élément d'alignement (7) comprend un élément ergot agencé au cadre (4) ou à l'élément de cache (6), lequel élément ergot coopère avec une encoche ménagée dans l'élément de cache (6) ou dans le cadre (4).

14. Machine à laver le linge selon l'une des revendications 1 à 13, **caractérisée par le fait que** l'élément de cache (10) est fait de matière plastique ou de métal, ou d'une combinaison de matière plastique et de métal.

15. Machine à laver le linge selon l'une des revendications 1 à 3, dans laquelle ledit élément de cache (6) comprend une couche de peinture pulvérisée ou appliquée sur ladite fenêtre transparente (5).

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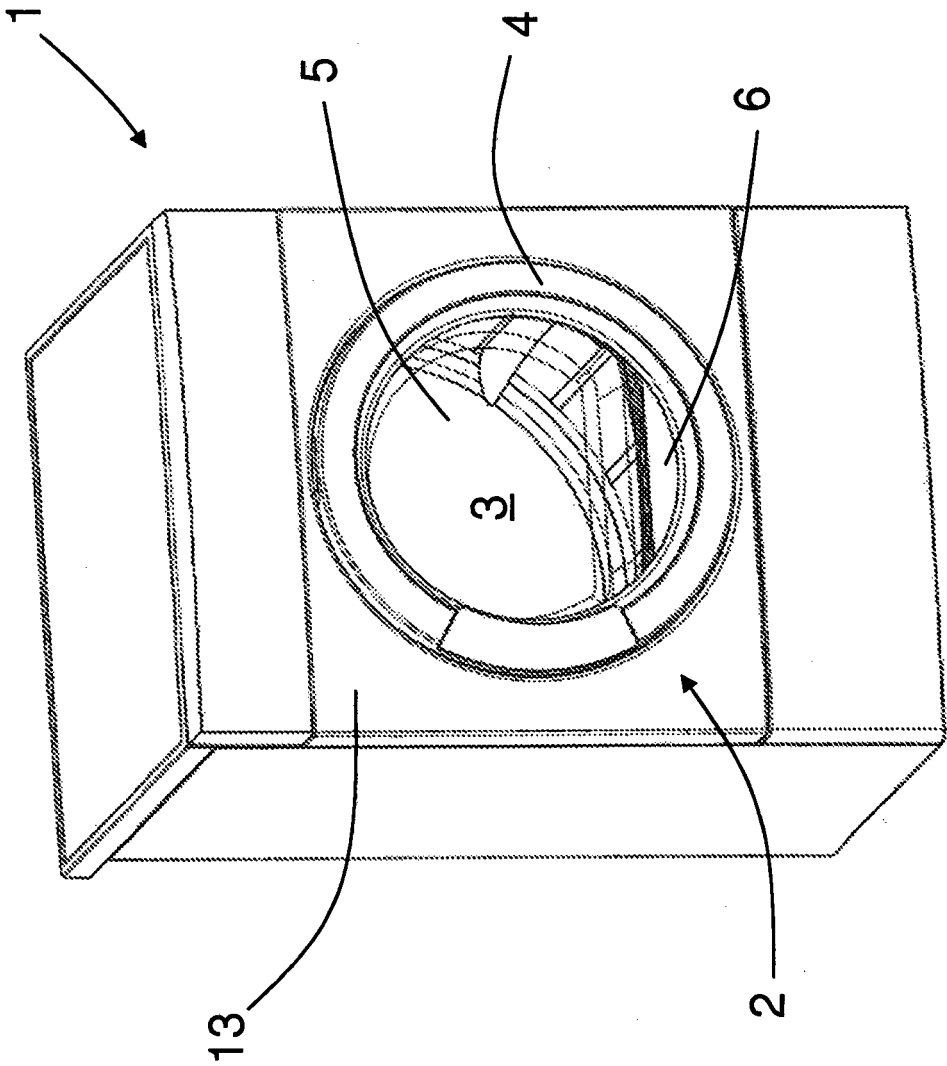


Fig. 1

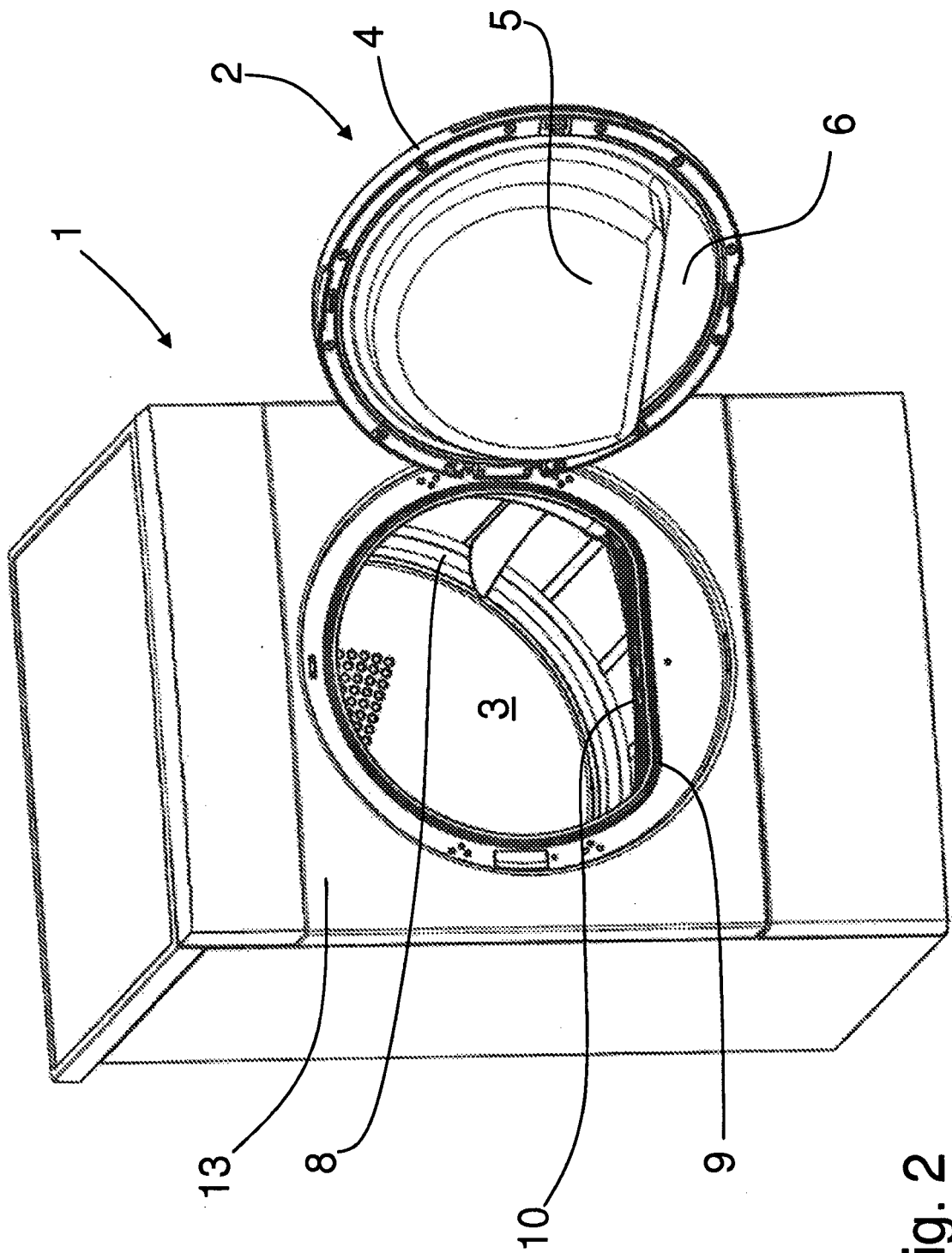


Fig. 2

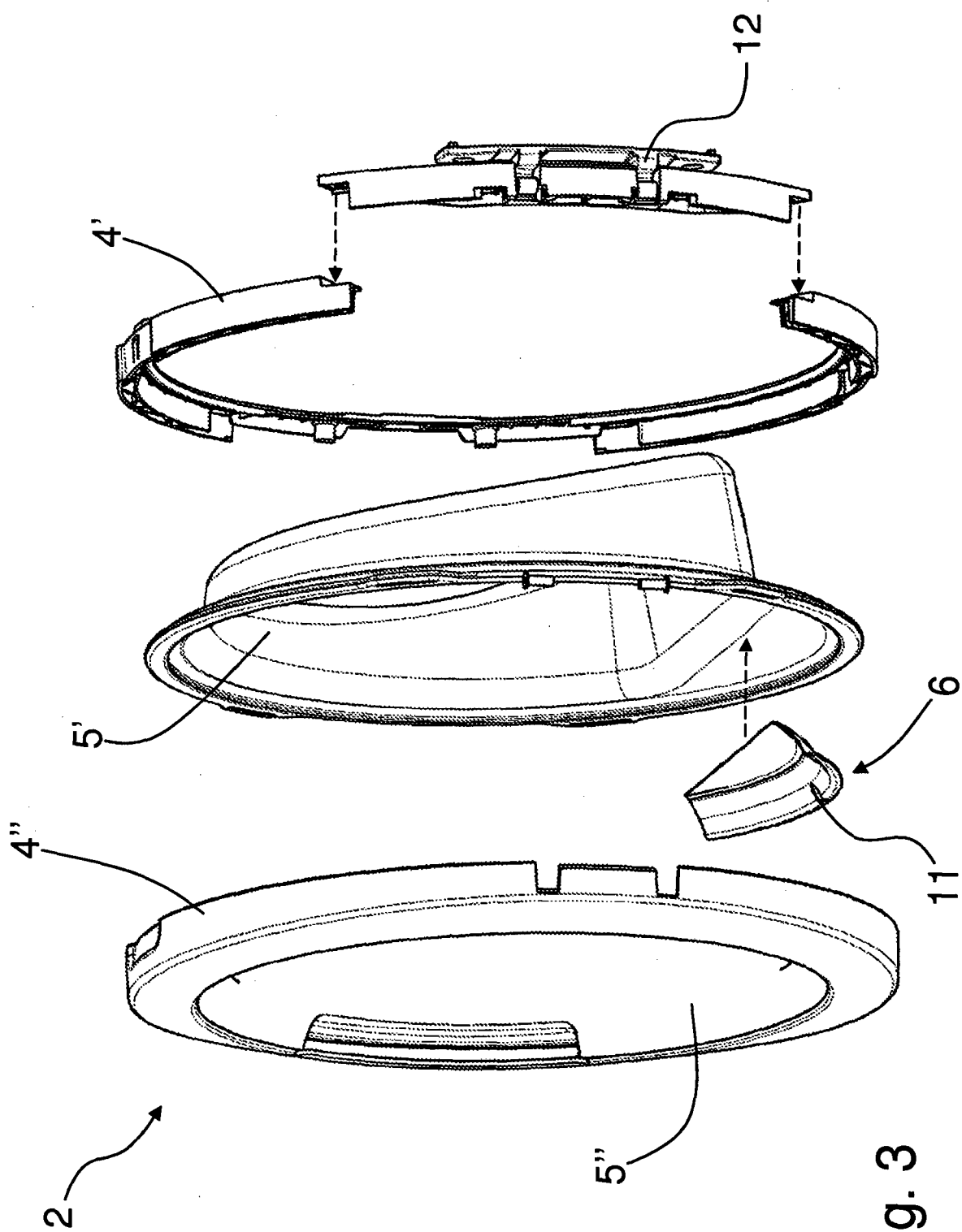


Fig. 3

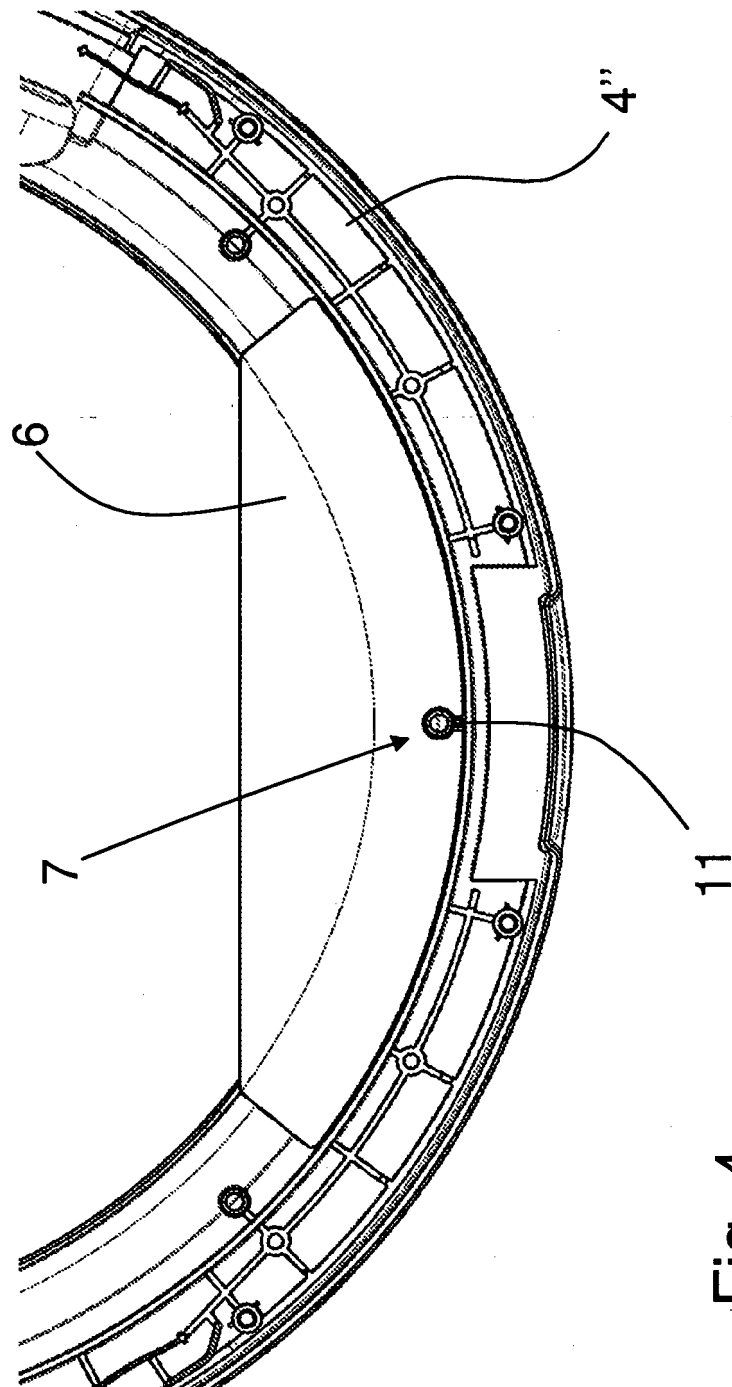


Fig. 4

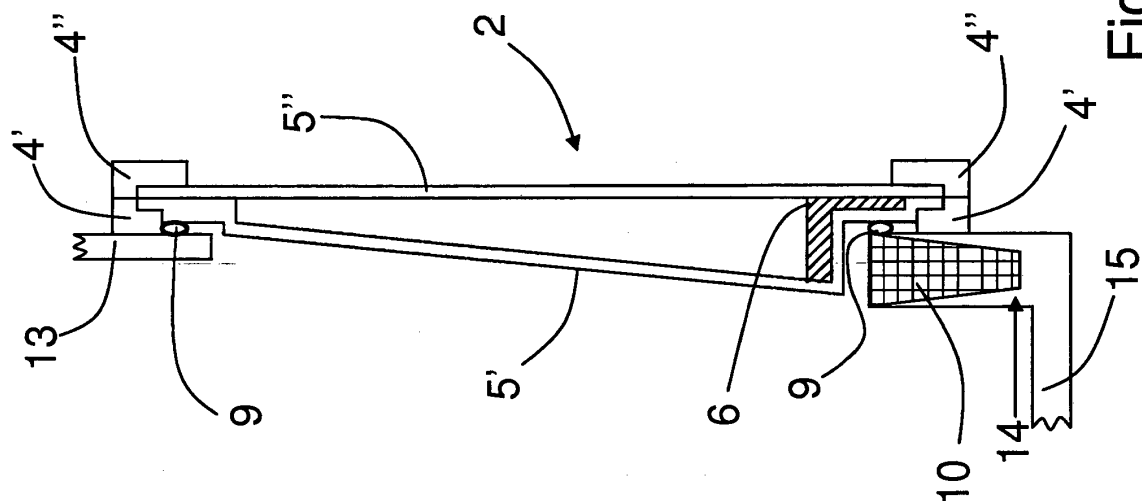


Fig. 6

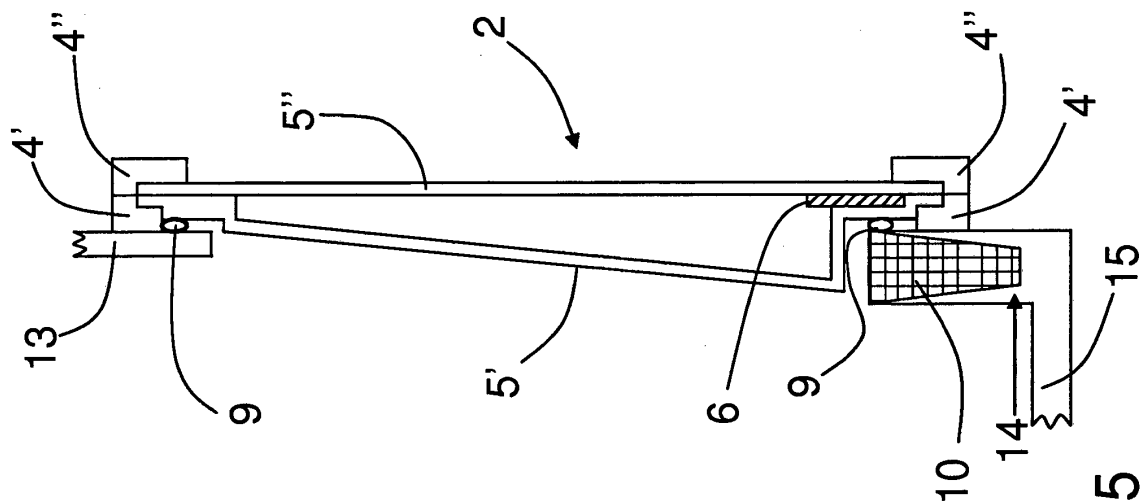


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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