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

(11) **EP 3 551 796 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
05.05.2021 Bulletin 2021/18

(21) Application number: **16816596.7**

(22) Date of filing: **07.12.2016**

(51) Int Cl.:
D06F 39/14 *(2006.01)* *D06F 58/20* *(2006.01)*

(86) International application number:
PCT/EP2016/079972

(87) International publication number:
WO 2018/103832 (14.06.2018 Gazette 2018/24)

(54) A LAUNDRY TREATMENT APPLIANCE HAVING AN IMPROVED DOOR HANDLE ASSEMBLY

WÄSCHEBEHANDLUNGSVORRICHTUNG MIT VERBESSERTER TÜRGRIFFANORDNUNG

APPAREIL DE TRAITEMENT DE LINGE COMPRENANT UN ENSEMBLE POIGNÉE DE PORTE AMÉLIORÉ

(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 MK MT NL NO PL PT RO RS SE SI SK SM TR

(43) Date of publication of application:
16.10.2019 Bulletin 2019/42

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Description

[0001] The present invention relates to a laundry treatment appliance, such as a laundry washing and/or drying machine, having a front door comprising a handle assembly whereby the durability of the door handle assembly is improved and its installation is simplified.

[0002] It is well-known that laundry treatment appliances such as washing machines, drying machines and combo washing/drying machines comprise a rotary drum in which cloth items are placeable and accessible via a front door, a water tub in which the rotary drum is rotatable and a motor providing said rotary drum to be driven by means of a pulley mechanism, the latter being disposed outside said tub. To this end, laundry treatment appliances have front doors typically allowing access into the rotary drum for loading and unloading the laundry to be processed.

[0003] A front door locking mechanism typically functions in the manner that a handle associated with a handle lever is rotatable to drive a hook lever, the latter being actuatable to lock or unlock the front door. When the door is closed, the hook settles into a locking slot of a locking arm while a safety latch provides an interengaged connection with the hook to ensure fixedly closing of the door.

[0004] The above-described mechanical design allows a given user to reach for a handle cover to unlock the front door of the laundry treatment machine by way of retracting the handle lever relative to the handle cover. It is to be noted that the mechanical structure outlined above can be designed by various connection elements, which may substantially affect production efficiency of the laundry treatment machine as a large number of individual elements can be necessary for the operation of the locking mechanism.

[0005] Therefore, a more efficient manner of providing operational functionality with a simplified mechanical structure is desirable so as to decrease manufacturing costs through reduction of involved components and accordingly man-hours. In addition, due to the shape and design of the door of the laundry treatment device, only a narrow space is available for the placement of the components for the attachment of the handle assembly. Therefore, it is advantageous to use specially designed attachment components to fit in the available space. In this way, the handle attachment components are easily hidden beneath the handle of the front door and also do not cause irritation to the user's hand by forming a rough surface on the back of the handle.

[0006] The present invention proposes a laundry treatment machine with an alternative simplified mechanical arrangement to obtain a front door handle assembly in a laundry treatment machine.

[0007] Among others, a prior art publication in the technical field of the invention may be referred to as WO2013189859, which discloses a door assembly for a laundry treatment appliance that comprises a first and a second component attachable to each other by at least one snap-fit connector. The first component is on the drum facing surface of the front door, and the second component is on the forwards facing surface around the drum opening. The snap fit connector comprises at least one first engaging element, for example a hook, and at least one corresponding second engaging element, for example a ledge. The at least one first and second engaging elements are distributed along the surface of the first and second components respectively. When the user closes the front door of the laundry appliance, the first engaging elements and the corresponding second engaging elements are mated and therefore the front door is locked. Document WO 2016/119833 A1 discloses another handle assembly for a laundry treatment appliance.

[0008] Further, Document WO 2017/020959 A1 is relevant for Article 54(3) EPC and discloses a laundry treatment appliance comprising a rotary drum in which laundry is placeable and a front door allowing access into the rotary drum for loading or unloading laundry through an access opening and having a handle assembly operateable to lock or unlock said front door, the handle assembly comprises a handle body, a handle edge piece and a handle inner piece, the handle edge piece comprises a central edge tab and at least one peripheral edge tab and the handle body comprises corresponding central edge slot and at least one peripheral edge slot such that the handle edge piece is attachable to the handle body by insertion of the central edge tab and of at least one peripheral edge tab into corresponding central edge slot and at least one peripheral edge slot, the handle body comprises at least one inner hook and said handle inner piece comprises corresponding at least one inner slot such that the handle inner piece is attachable to the handle body by insertion of said at least one inner hook into corresponding at least one inner slot, the handle inner piece comprises flexible inner tab whereby the inner hook is kept in the inner slot by the flexible inner tab.

[0009] The present invention, on the other hand, addresses the situation where the structure of a handle assembly for a front door of a laundry treatment appliance such as a laundry washing and/or drying machine is simplified to provide durability and ease of installation.

[0010] To this end, the present invention provides an effective system in which the handle assembly is assembled by attachment of a handle body with a handle edge piece and handle inner piece via tabs and corresponding slots.

[0011] The present invention provides a front door for a laundry treatment appliance comprising a handle assembly as provided by the characterizing features defined in Claim 1.

[0012] Primary object of the present invention is to provide a front door comprising a handle assembly for a laundry treatment appliance such as a laundry washing and/or drying machine whereby the durability of the door handle assembly is improved and its installation is simplified.

[0013] The present invention proposes a laundry treat-

ment appliance with front door handle assembly having a handle body, handle edge piece and handle inner piece. Flexible inner tabs of the handle inner piece keep inner hooks of the handle body in inner slots of the handle inner piece. Flexible peripheral edge tabs of the handle body keep peripheral edge hooks of the handle edge piece in peripheral edge slots of the handle body.

[0014] The drawings are not meant to delimit the scope of protection as identified in the Claims, nor should they be referred to alone in an effort to interpret the scope identified in said Claims without recourse to the technical disclosure in the description of the present invention. The drawings are only exemplary in the sense that they do not necessarily reflect the actual dimensions and relative proportions of the respective components of the system.

Fig. 1 demonstrates a perspective view of a front door comprising a handle assembly according to the present invention.

Fig. 2 demonstrates a perspective view of a front door handle assembly according to the present invention.

Fig. 3 demonstrates an exploded front view of a front door handle assembly according to the present invention.

Fig. 4 demonstrates an exploded back view of a front door handle assembly according to the present invention.

Fig. 5 demonstrates a back view of a front door handle assembly according to the present invention.

Fig. 6 demonstrates a sectional view of a handle assembly taken along line A-A of Figure 5 according to the present invention.

[0015] The following numerals are assigned to different part number used in the detailed description:

1. Front door
2. Front door frame
3. Front door glass
4. Handle assembly
5. Handle body
6. Handle edge piece
7. Handle inner piece
8. Central edge tab
9. Central edge hook
10. Central edge slot
11. Peripheral edge tab
12. Peripheral edge hook
13. Peripheral edge slot
14. Flexible peripheral edge tab
15. Edge support flange
16. Inner support flange
17. Flexible inner tab
18. Inner hook
19. Inner slot

[0016] The present invention proposes a front door (1) for a laundry treatment appliance such as a laundry washing and/or drying machine. The front door (1) covers the access opening of a laundry treatment appliance through which laundry can be loaded into or unloaded from the drum of said laundry treatment appliance. The front door (1) comprises a front door frame (2), a front door glass (3) and a handle assembly (4) (Figure 1). The handle assembly (4) ensures that the front door (1) is secured in the closed position, as well as it allows the user to open the front door (1) by rotating the handle.

[0017] The handle assembly (4) comprises a handle body (5), a handle edge piece (6) and a handle inner piece (7) (Figure 2). The small number of components of the handle assembly (4) advantageously provides ease of installation during production. It also imparts durability to the handle assembly (4) such that the handle remains stable during continuous cycle of rotation by the user and does not disintegrate. Additionally, it is configured to be assembled to look and form a durable unitary piece.

[0018] Figures 3 and 4 illustrate the front and back views of the unassembled handle assembly (4). The handle edge piece (6) is attachable to the handle body (5) by inserting a central edge tab (8), preferably provided on the handle edge piece (6), into a corresponding central edge slot (10), preferably provided on the handle body (5), and by inserting at least one peripheral edge tab (11) into corresponding at least one peripheral edge slot (13). While inserting the peripheral edge tabs (11) into corresponding peripheral edge slots (13), flexible peripheral edge tabs (14) rotate away from the plane of the handle body (5) due to peripheral edge hooks (12). After peripheral edge hooks (12) reach their position in peripheral edge slots (13), the peripheral edge hooks (12) are kept in place by the flexible peripheral edge tabs (14). Additionally, the handle edge piece (6) is fixed in position via a plurality of uniformly distributed edge support flanges (15) on the edge-facing side of the handle body (5). In this manner, the handle edge piece (6) and the handle body (5) are uniformly and fixedly secured in attached position.

[0019] According to the embodiment illustrated in the attached figures, the peripheral edge tabs (11) are provided on the handle edge piece (6), preferably two peripheral edge tabs (11), and the peripheral edge hooks (12) are provided each on a corresponding peripheral edge tabs (11), while the peripheral edge slots (13) and the flexible peripheral edge tabs (14) are provided on the handle body (5).

[0020] The handle inner piece (7) is attachable to the handle body (5) by inserting at least one inner hook (18) into corresponding at least one inner slot (19).

[0021] While inserting the inner hooks (18) into the corresponding inner slots (19), flexible inner tabs (17) rotate away from the plane of handle body (5) due to the inner hooks (18). After the inner hooks (18) reach their position in the inner slots (19), the inner hooks (18) are kept in place by the flexible inner tabs (17). Additionally, the han-

dle inner piece (7) is fixed in position via a plurality of uniformly distributed inner support flanges (16) on the inner-facing side of the handle body (5) (Figures 5 and 6).

[0022] According to the embodiment shown in the attached figures, the inner hooks (18) are provided on the handle body (5) and the inner slots (19) and the flexible inner tabs (17) are provided on the handle inner piece (7).

[0023] According to an aspect of the present invention, the two peripheral edge hooks (12) extend along respective longitudinal axes, parallel to the plane of handle body (5), which form a wide angle, i.e. an obtuse angle, at an imaginary point where the two axes intersect. In other words, the two peripheral edge hooks (12) face away from a central point of the handle body (5).

[0024] In a nutshell, the present invention proposes a laundry treatment appliance comprising a rotary drum in which laundry is placeable and a front door (1) allowing access into the rotary drum for loading or unloading laundry through an access opening, said front door (2) being openable in the manner that a handle assembly (4) operates to lock or unlock said front door (1).

[0025] The handle assembly (4) comprises a handle body (5), a handle edge piece (6) and a handle inner piece (7).

[0026] In an embodiment of the present invention, the handle edge piece (6) comprises a central edge tab (8) and at least one peripheral edge tab (11) and the handle body (5) comprises a corresponding central edge slot (10) and at least one peripheral edge slot (13) such that the handle edge piece (6) is attachable to the handle body (5) by insertion of the central edge tab (8) and at least one peripheral edge tab (11) respectively into the corresponding central edge slot (10) and the corresponding at least one peripheral edge slot (13).

[0027] In a further embodiment of the present invention, the handle body (5) comprises at least one inner hook (18) and the handle inner piece (7) comprises corresponding at least one inner slot (19) such that the handle inner piece (7) is attachable to the handle body (5) by insertion of said at least one inner hook (18) into corresponding at least one inner slot (19).

[0028] In a further embodiment of the present invention, the handle inner piece (7) comprises flexible inner tabs (17) whereby said inner hooks (18) are kept in said inner slots (19) by said flexible inner tabs (17).

[0029] In a further embodiment of the present invention, the handle body (5) comprises flexible peripheral edge tabs (14) whereby the peripheral edge hooks (12) are kept in the peripheral edge slots (13) by the flexible peripheral edge tabs (14).

[0030] Flexible inner tabs (17) keeping the inner hooks (18) in the inner slots (19) and flexible peripheral edge tabs (14) keeping the peripheral edge hooks (12) in the peripheral edge slots (13) advantageously provide that the handle body (5), the handle edge piece (6) and the handle inner piece (7) are assembled and disassembled in a flexibly practical manner by sliding respective pieces one over the other. The assembled structure also maintains its fixedly attached configuration despite the use of flexible members because when assembled, interengaged elements are not allowed displacement along the plane of the handle assembly (4).

[0031] In a further embodiment of the present invention, the flexible inner tabs (17) are at least partially flexibly rotatable in a direction away from the plane of handle body (5) during assembling of the handle body (5) with the handle inner piece (7) whereby inner hooks (18) are inserted into corresponding inner slots (19).

[0032] In a further embodiment of the present invention, the handle body (5) comprises a plurality of edge support flanges (15) on its edge-facing side whereby the handle edge piece (6) and the handle body (5) are uniformly secured in assembled position.

[0033] In a further embodiment of the present invention, the handle body (5) comprises a plurality of inner support flanges (16) on its inner-facing side whereby the handle inner piece (7) and the handle body (5) are uniformly secured in assembled position.

[0034] In a further embodiment of the present invention, the longitudinal axes, along which the two peripheral edge hooks (12) extend, form a wide angle at a point where the two axes intersect.

[0035] Therefore, a front door (1) comprising a handle assembly (4) is proposed such that the durability of the door handle assembly is improved and its installation is simplified. Handle assembly (4) is assembled by attachment of a handle body (5) with a handle edge piece (6) and handle inner piece (7) via tabs (8, 11, 17), hooks (9, 12, 18) and corresponding slots (10, 13, 19). In this manner, the handle remains stable during continuous cycle of rotation by the user and does not disintegrate. Additionally, it is assembled to look and form a durable unitary piece.

Claims

1. A laundry treatment appliance comprising a rotary drum in which laundry is placeable and a front door (1) allowing access into the rotary drum for loading or unloading laundry through an access opening and having a handle assembly (4) operateable to lock or unlock said front door (1),

   the handle assembly (4) comprises a handle body (5), a handle edge piece (6) and a handle inner piece (7),

   the handle edge piece (6) comprises a central edge tab (8) and at least one peripheral edge tab (11) and the handle body (5) comprises a corresponding central edge slot (10) and at least one peripheral edge slot (13) such that the handle edge piece (6) is attachable to the handle body (5) by insertion of the central edge tab (8) and the at least one peripheral edge tab (11) into the corresponding central edge slot (10) and

the at least one peripheral edge slot (13),
the handle body (5) comprises at least one inner hook (18) and the handle inner piece (7) comprises corresponding at least one inner slot (19) such that the handle inner piece (7) is attachable to the handle body (5) by insertion of said at least one inner hook (18) into the corresponding at least one inner slot (19),
the handle inner piece (7) comprises at least one flexible inner tab (17) whereby the corresponding at least one inner hook (18) is kept in the inner slot (19) by the flexible inner tab (17) wherein
the handle body (5) comprises at least one flexible peripheral edge tab (14) such that while inserting the at least one peripheral edge tab (11) into the corresponding peripheral edge slot (13), the flexible peripheral edge tab (14) rotates away from the plane of the handle body (5) due to peripheral edge hook (12) and after peripheral edge hook (12) reaches its position in peripheral edge slot (13), the peripheral edge hook (12) is kept in the peripheral edge slot (13) by the flexible peripheral edge tab (14).

2. A laundry treatment appliance as in Claim 1, wherein said flexible inner tab (17) is at least partially flexibly rotatable in a direction away from the plane of the handle body (5) during assembling of the handle body (5) with the handle inner piece (7), whereby inner hook (18) is inserted into corresponding inner slot (19).

3. A laundry treatment appliance as in Claim 1, wherein said handle body (5) comprises a plurality of edge support flanges (15) on the edge-facing side of said handle body (5) whereby the handle edge piece (6) and the handle body (5) are uniformly secured in assembled position.

4. A laundry treatment appliance as in Claim 1, wherein said handle body (5) comprises a plurality of inner support flanges (16) on the inner-facing side of said handle body (5) whereby the handle inner piece (7) and the handle body (5) are uniformly secured in assembled position.

5. A laundry treatment appliance as in Claim 1, wherein two peripheral edge tabs (11) are provided on the handle edge piece (6), and two peripheral edge hooks (12) are provided each on a corresponding peripheral edge tab (11) and the longitudinal axes parallel to the plane of handle body (5) along which the two peripheral edge hook (12) extend form a wide angle at a point where the two axes intersect.

Patentansprüche

1. Ein Wäschebehandlungsvorrichtung umfasst eine Drehtrommel, in dessen die Wäsche platziert werden kann, eine Vordertür (1), die den Zugang in die Drehtrommel zum Laden oder Entladen von Wäsche durch eine Zugangsöffnung ermöglicht und eine Griffanordnung (4) umfasst, die zum Verriegeln oder Entriegeln der Vordertür (1) betreibbar ist, wobei die Griffanordnung (4) einen Griffkörper (5), ein Griffkantenstück (6) und ein Griffinnenstück (7) umfasst, das Griffkantenstück (6) umfasst eine Mittelkantenlasche (8) und mindestens eine Umfangsantenlasche (11), Griffkörper (5) umfasst einen entsprechenden Mittelkantenschlitz (10) und mindestens einen Umfangskantenschlitz (13), so dass das Griffkantenstück (6) durch Einsetzen der Mittelkantenlasche (8) am Griffkörper (5) befestigt werden kann, mindestens eine Umfangskantenlasche (11) in den entsprechenden Mittelkantenschlitz (10) und mindestens einen Umfangskantenschlitz (13), der Griffkörper (5) umfasst mindestens einen Innenhaken (18), das Griffinnenstück (7) umfasst einen entsprechenden Innenschlitz (19), so dass das Griffinnenstück (7) am Griffkörper (5) montierbar ist, durch Einführen des mindestens einen inneren Hakens (18) in den entsprechenden mindestens einen inneren Schlitz (19), das Griffinnenstück (7) umfasst mindestens eine flexible Innenlasche (17), wobei der entsprechende Innenhaken (18) mindestens eine durch die flexible Innenlasche (17), in der der Griffkörper (5) enthalten ist, in dem Innenschlitz (19) gehalten wird, wobei der Griffkörper (5) mindestens eine flexible Umfangskantenlasche (14) umfasst, so dass beim Einführen der mindestens einen Umfangskantenlasche (11) in den entsprechenden Umfangskantenschlitz (13) die flexible Umfangskantenlasche (14) sich aufgrund des Umfangskantenhakens (12) von der Ebene des Griffkörpers (5) wegdreht, wobei nachdem der Umfangskantenhaken (12) seine Position im Umfangskantenschlitz (13) erreicht hat, wird der Umfangskantenhaken (12) durch die flexible Umfangskantenlasche (14) im Umfangskantenschlitz (13) gehalten.

2. Ein Wäschebehandlungsvorrichtung, wie in Anspruch 1 aufgeführt wird, wobei die flexible innere Lasche (17) während des Zusammenbaus des Griffkörpers (5) mit dem Griffinnenstück (7) zumindest teilweise flexibel in einer Richtung weg von der Ebene des Griffkörpers (5) drehbar ist und der innere Haken (18) in den entsprechenden inneren Schlitz (19) eingeführt wird.

3. Ein Wäschebehandlungsvorrichtung, wie in Anspruch 1 aufgeführt wird, wobei der Griffkörper (5) mehrere Kantenstützflansche (15) auf der der Kante zugewandten Seite des Griffkörpers (5) umfasst, wo-

bei das Griffkantenstück (6) und der Griffkörper (5) in einer gleichmäßigen Position zusammengebaut sind.

4. Ein Wäschebehandlungsvorrichtung, wie in Anspruch 1 aufgeführt wird, wobei der Griffkörper (5) mehrere innere Stützflansche (16) an der nach innen gerichteten Seite des Griffkörpers (5) umfasst, wobei das Griffinnenstück (7) und der Griffkörper (5) in einer gleichmäßigen Position zusammengebaut sind.

5. Ein Wäschebehandlungsvorrichtung, wie in Anspruch 1 aufgeführt wird, wobei zwei Umfangskantenlaschen (11) an dem Griffkantenstück (6) vorgesehen sind und zwei Umfangskantenhaken (12) jeweils an einer entsprechenden Umfangskantenlasche (11) vorgesehen sind, wobei die Längsachsen parallel zur Ebene des Griffkörpers (5), entlang der sich die beiden Umfangskantenhaken (12) erstrecken, an einem Punkt, an dem sich die beiden Achsen schneiden, einen Weitwinkel bilden.

Revendications

1. Un appareil de traitement du linge comprenant un tambour rotatif dans lequel le linge peut être placé et une porte frontale (1) permettant d'accéder au tambour rotatif pour charger ou décharger le linge par une ouverture d'accès et ayant un ensemble de poignée (4) pouvant être actionné pour verrouiller ou déverrouiller ladite porte frontale (1),
l'ensemble de la poignée (4) comprend un corps de poignée (5), une pièce de bord de poignée (6) et une pièce intérieure de poignée (7),
la pièce de bord de la poignée (6) comprend une patte de bord centrale (8) et au moins une patte de bord périphérique (11) et le corps de la poignée (5) comprend une fente de bord centrale correspondante (10) et au moins une fente de bord périphérique (13) de telle sorte que la pièce de bord de la poignée (6) peut être fixée au corps de la poignée (5) en insérant la patte de bord centrale (8) et au moins une patte de bord périphérique (11) dans la fente de bord centrale correspondante (10) et au moins une fente de bord périphérique (13),
le corps de la poignée (5) comprend au moins un crochet intérieur (18) et la pièce intérieure de la poignée (7) comprend au moins une fente intérieure correspondante (19) de sorte que la pièce intérieure de la poignée (7) peut être fixée au corps de la poignée (5) par insertion dudit au moins un crochet intérieur (18) dans ladite au moins une fente intérieure correspondante (19),
la partie intérieure de la poignée (7) comprend au moins une languette intérieure flexible (17), le crochet intérieur correspondant (18) étant maintenu dans la fente intérieure (19) par la languette intérieure flexible (17)
dans laquelle
le corps de la poignée (5) comprend au moins une patte de bord périphérique flexible (14) de telle sorte que, lors de l'insertion d'au moins une patte de bord périphérique (11) dans la fente de bord périphérique correspondante (13), la patte de bord périphérique flexible (14) tourne en s'éloignant du plan du corps de la poignée (5) en raison du crochet de bord périphérique (12) et, après que le crochet de bord périphérique (12) a atteint sa position dans la fente de bord périphérique (13), le crochet de bord périphérique (12) est maintenu dans la fente de bord périphérique (13) par la patte de bord périphérique flexible (14).

2. Un appareil de traitement du linge comme dans la déclaration 1, dans lequel ladite languette intérieure flexible (17) peut tourner de manière flexible au moins partiellement dans une direction s'éloignant du plan du corps de poignée (5) pendant l'assemblage du corps de poignée (5) avec la pièce intérieure de poignée (7), de sorte que le crochet intérieur (18) est inséré dans la fente intérieure correspondante (19).

3. Un appareil de traitement du linge selon la déclaration 1, dans lequel ledit corps de poignée (5) comprend une pluralité de brides de support de bord (15) sur le côté dudit corps de la poignée (5) faisant face au bord, la pièce de bord de la poignée (6) et le corps de la poignée (5) étant uniformément fixés en position assemblée.

4. Un appareil de traitement du linge comme dans la déclaration 1, dans lequel ledit corps de poignée (5) comprend une pluralité de brides de support intérieures (16) sur le côté orienté vers l'intérieur dudit corps de la poignée (5), la pièce intérieure de la poignée (7) et le corps de la poignée (5) étant uniformément fixés en position assemblée.

5. Un appareil de traitement du linge comme dans la déclaration 1, dans lequel deux pattes de bord périphérique (11) sont prévues sur la pièce de bord de la poignée (6), et deux crochets de bord périphérique (12) sont prévus chacun sur une patte de bord périphérique correspondante (11) et les axes longitudinaux parallèles au plan du corps de la poignée (5) le long desquels les deux crochets de bord périphérique (12) s'étendent forment un grand angle à un point où les deux axes se coupent.

Fig. 1

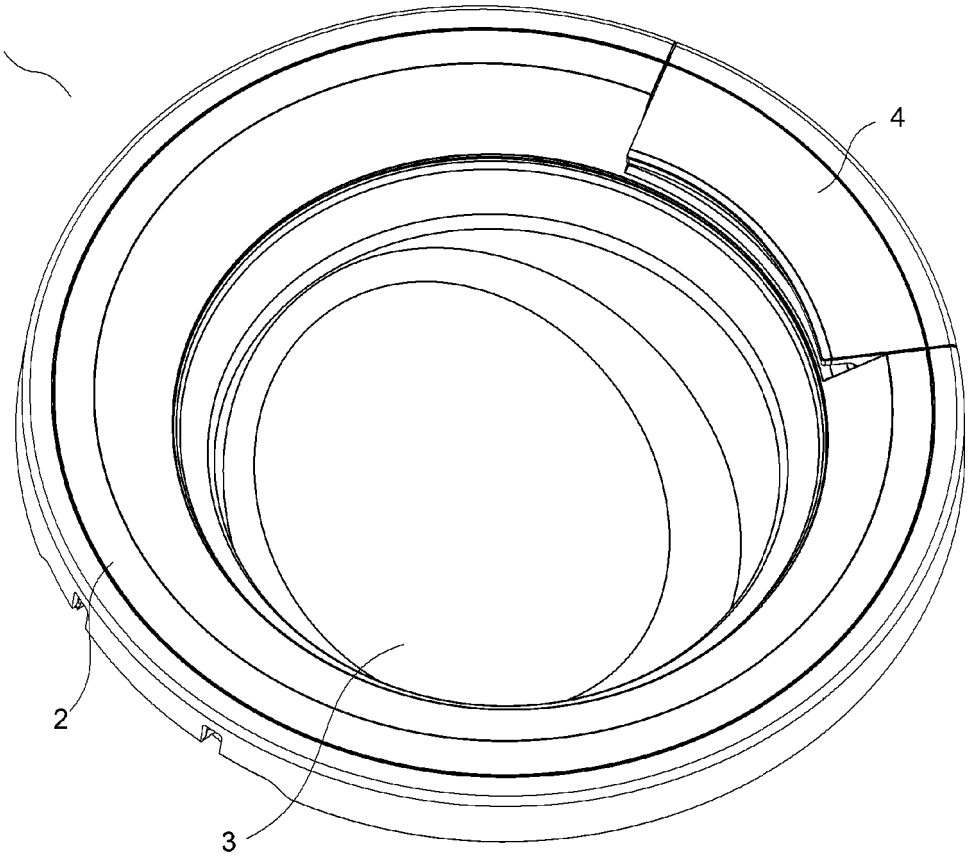


Fig. 2

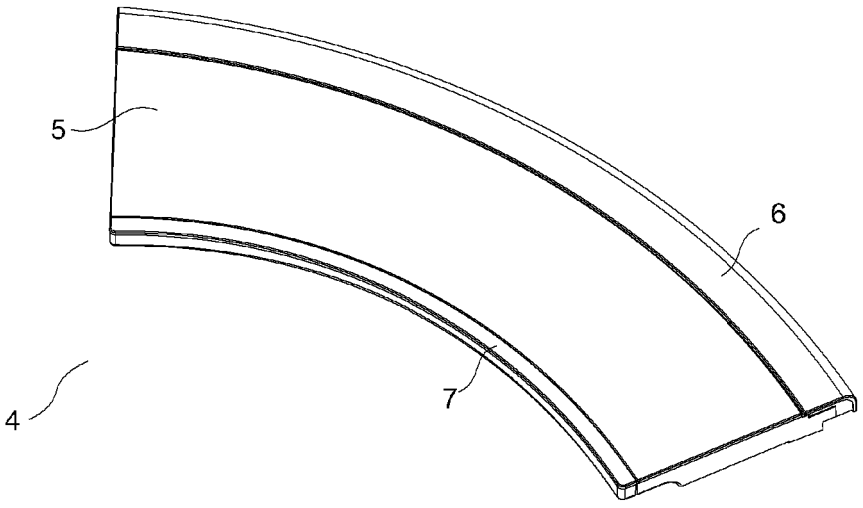


Fig. 3

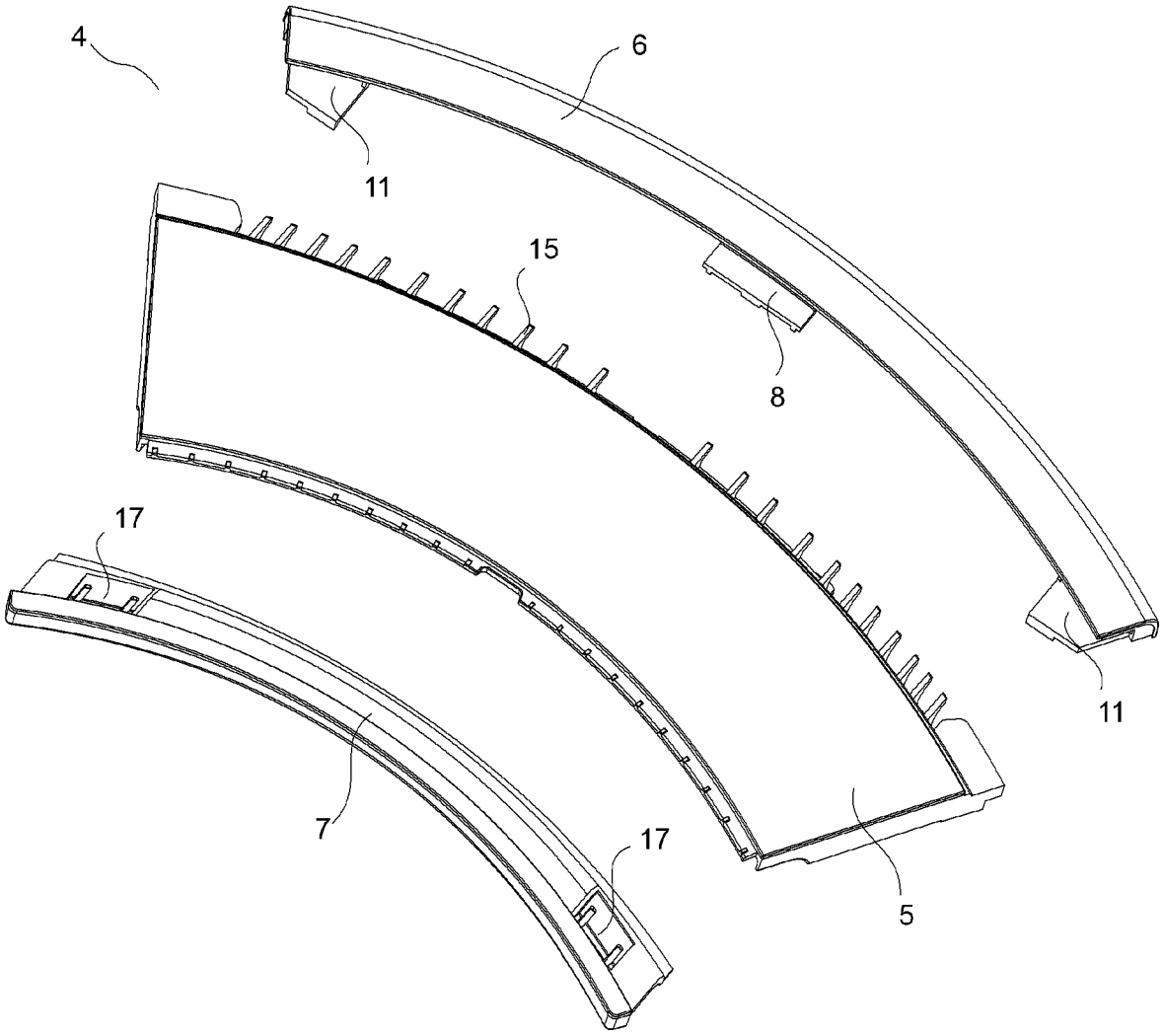


Fig. 4

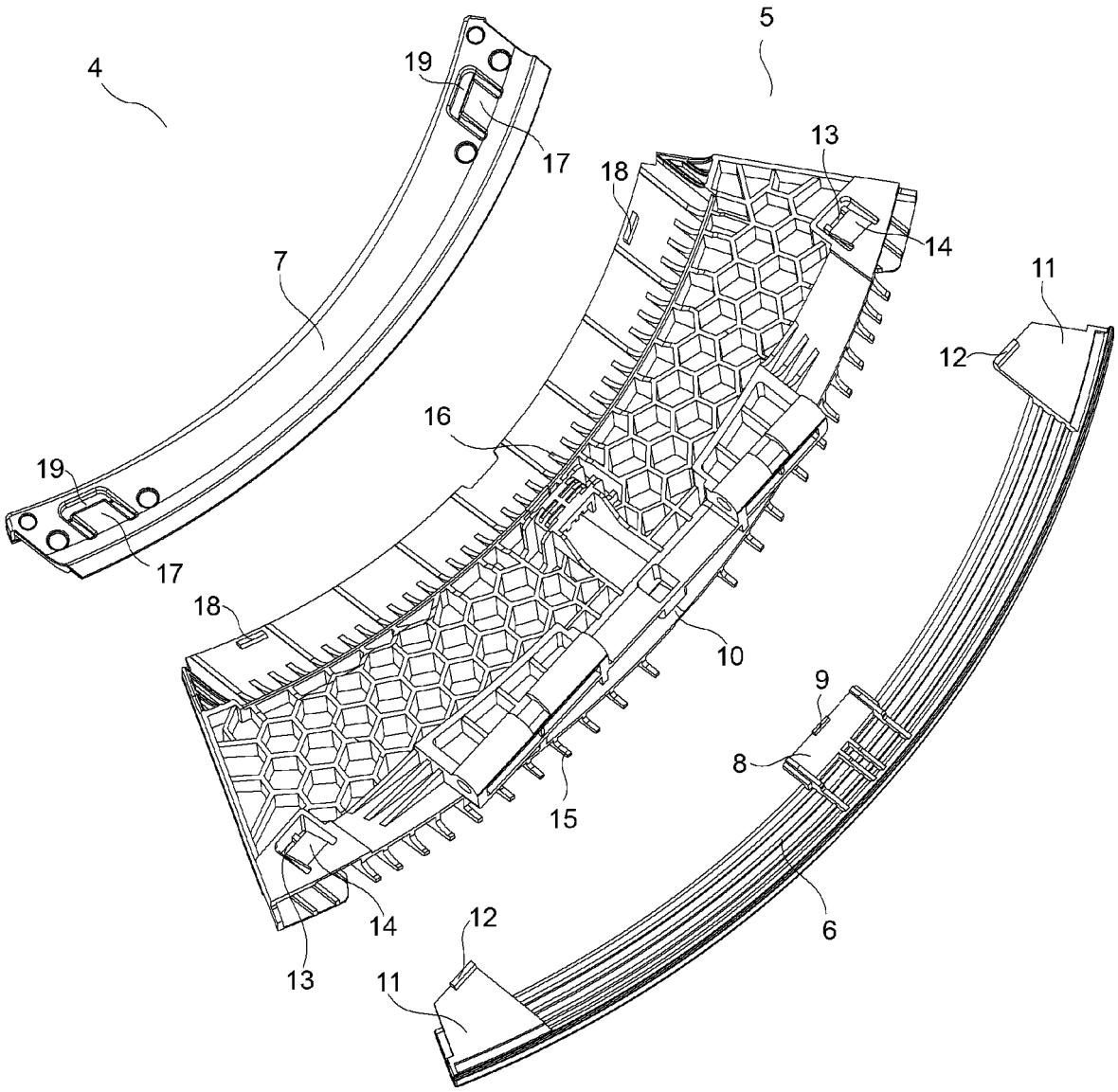


Fig. 5

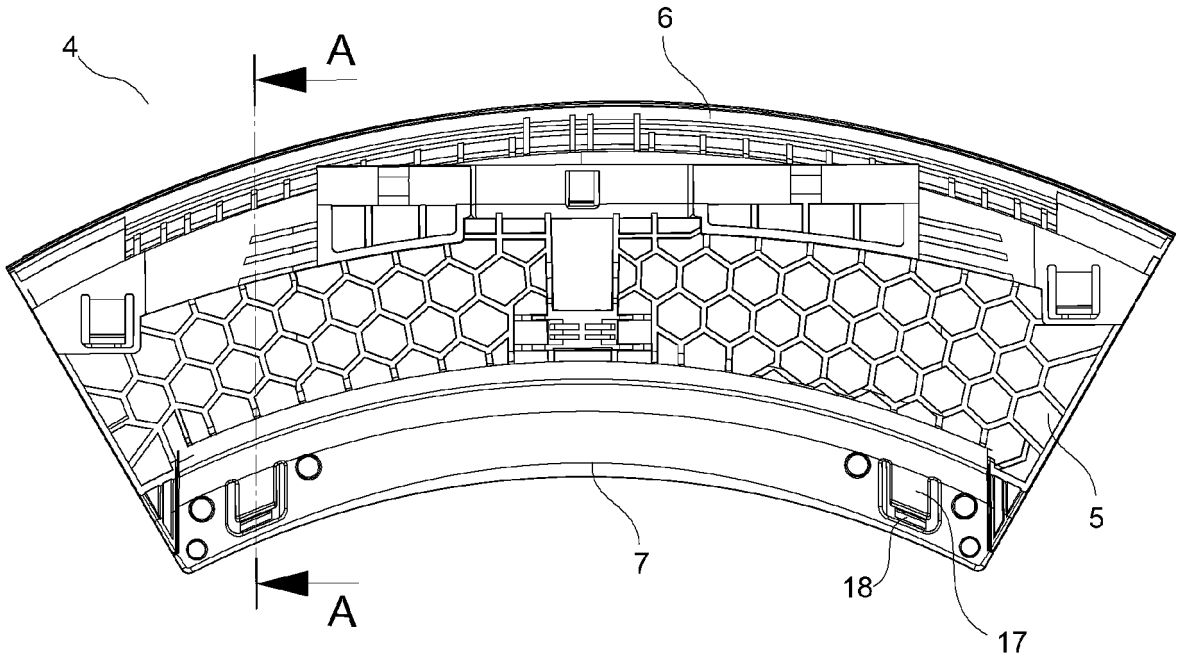
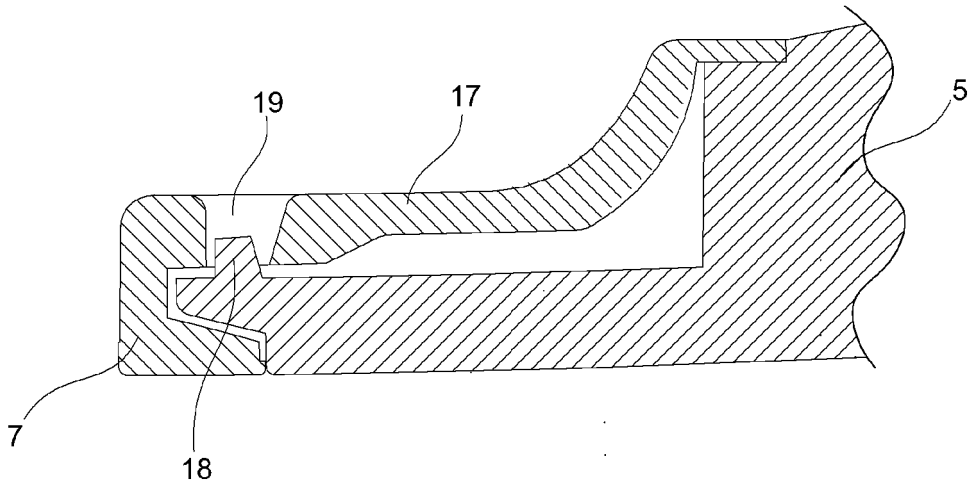


Fig. 6



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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