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(54) **CLOTHES DRYER**

(57) A clothes dryer includes a clothes drying drum, a front wind channel and a door body. A drying bracket is provided in the clothes drying drum, and one end of the drying bracket is connected onto the front wind channel in a hanging manner. The front wind channel is provided with a hook for connecting the drying bracket in a hanging manner, and the hook and the front wind channel are set in an integrated manner. Under the premise of not influencing the mold stripping of the front wind channel and the normal use of the hook, the mold stripping manner of the front wind channel is improved, thereby eliminating the contradiction of the mold stripping directions of the hook and the front wind channel, reducing the mold cost, improving the production efficiency, and improving the intensity of the hook.

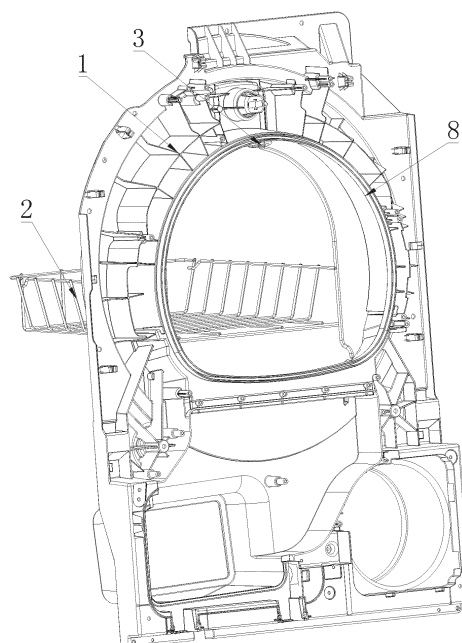


Fig. 1

Description

Technical Field

[0001] The present disclosure relates to a field of clothes dryer, and particularly relates to a clothes dryer in which a front wind channel and a hook are arranged in an integrated manner.

Background

[0002] In domestic clothes dryers, a hook of the drying bracket is located above the central ring of the front wind channel, and mainly plays a role of supporting the drying bracket. Due to the design of the mold of the front wind channel, the hook of the drying bracket cannot be molded in an integrated manner with the front wind channel, and a new mold needs to be designed for the hook, thereby leading to such problems as high cost of the mold, multiple assembling procedures and low production efficiency.

[0003] At present, the hook and the front wind channel are designed in a separated manner, which is mainly caused by mold splitting of the central ring in the front wind channel. The draft angle of the whole central ring is $+1^\circ$, mold stripping is towards the left side, while the parting line is on the right side, and then mold cannot be stripped at the position of the hook. In order to satisfy the mold stripping requirement of the front wind channel, the hook needs to be singly regarded as a separate part. However, if the hook is separately regarded as a part, a new mold needs to be designed, and then the cost of mold is increased. Meanwhile, in the assembly process, the process of installing a hook needs to be added, thereby increasing the production cost, and reducing the production efficiency. And as the hook and the front wind channel are separated, then the strength will be reduced.

[0004] In view of this, the present disclosure is hereby proposed.

Summary

[0005] The objective of the present disclosure is to overcome the shortcomings of the prior art and provide a clothes dryer, wherein a front wind channel and a hook of the drying bracket are designed in an integrated manner, thereby reducing the cost of the mold and improving the production efficiency.

[0006] In order to realize the present objective, the present disclosure adopts the following technical solution.

[0007] A clothes dryer includes a clothes drying drum, a front wind channel and a door body. A drying bracket is provided in the clothes drying drum, and one end of the drying bracket is connected onto the front wind channel in a hanging manner. The front wind channel is provided with a hook for connecting the drying bracket in a hanging manner, and the hook and the front wind channel

are set in an integrated manner.

[0008] The hook is arranged on a top of an inner wall of the front wind channel, and the opening of the hook is toward the door body of the clothes dryer.

[0009] The hook includes a connecting part and a supporting part, the connecting part is formed by an extension of the inner wall of the front wind channel towards a central axis direction of the clothes drying drum, and the supporting part is formed by the extension of an end of the connecting part towards the door body along the central axis direction of the clothes drying drum.

[0010] The inside of the hook is of a hollow structure, an end of the hook towards the clothes drying drum is of an open structure, the hook is provided with a stiffened plate therein. The stiffened plate is arranged along an axial direction, and preferably, the inside of the connecting part is of a hollow structure. The end part of the connecting part toward the clothes drying drum is of an open structure, the connecting part is provided with a stiffened plate therein, and the stiffened plate is arranged along an axial direction.

[0011] The inner wall of the front wind channel, except the position in which the hook is located, inclines towards the direction far away from the central axis from the door body to the clothes drying drum, and the inner wall of the front wind channel where the hook is located inclines towards the direction far away from the central axis direction from the connecting part to the door body.

[0012] The supporting part of the hook inclines towards a direction close to the central axis from the connecting end connected with the connecting part to the opening end towards the door body.

[0013] The angle of inclination is a draft angle, and preferably, an angle of inclination is in a range of 1° - 3° .

[0014] Two sides of the hook on the inner wall of the front wind channel are inclined planes with different inclining directions, convex ribs are arranged between the inclined planes with different inclining directions, and the convex ribs are in smooth transition with the inclined planes on the two sides.

[0015] After the technical solution of the present disclosure is adopted, the following beneficial effects are brought about:

1. In the present disclosure, the hook and the front wind channel are designed in an integrated manner, under the premise of not influencing the mold stripping of the front wind channel and the normal use of the hook, the mold stripping manner of the front wind channel is improved, thereby eliminating the contradiction of the mold stripping directions of the hook and the front wind channel, reducing the mold cost, improving the production efficiency, and improving the intensity of the hook.

2. In the present disclosure, the hook structure has a simple structure and convenient molding in an integrated manner, thereby facilitating users in taking

and placing the drying bracket and ensuring strength. The opening of the hook is toward the door body of the clothes dryer, thereby avoiding the influence on the turnover of clothes inside the drum when the clothes are hooked on.

3. In the present disclosure, the stiffened plate can enhance the connecting strength between the hook and the inner wall of the front wind channel, the overall size is smaller than that in which the hook and the front wind channel are arranged in a separated manner, thereby reducing the possibility of scraping clothes and reducing the consumption of raw materials. The arrangement along the axial direction does not influence the mold stripping in the manufacturing process.

[0016] The specific embodiments of the present disclosure will be further described in detail below in combination with the accompanying drawings.

Brief Description of the Drawings

[0017]

Fig. 1 is a structural schematic diagram of a clothes dryer (without the clothes drying drum and the door body) in the present disclosure.

Fig. 2 is a structural schematic diagram of the front wind channel of the present disclosure.

Fig. 3 is a sectional view of Fig. 2.

Fig. 4 is a schematic diagram of the front wind channel in another point of view.

Fig. 5 is a schematic diagram of the front wind channel in another point of view.

Fig. 6 is a schematic diagram of the front wind channel in another point of view.

Fig. 7 is an enlarged view of part A in Fig. 6.

[0018] Reference numerals: 1, front wind channel, 2, drying bracket, 3, hook, 4, connecting part, 5, supporting part, 6, stiffened plate, 7, convex rib, 8, inner wall of the front wind channel, 9, central axis.

Detailed Description of the Embodiments

[0019] As shown in Fig. 1 to Fig. 7, the present disclosure provides a clothes dryer which includes a clothes drying drum, a front wind channel 1 and a door body. The clothes drying drum is provided with a drying bracket 2 therein, the front wind channel 1 is provided with a hook 3 for hanging the drying bracket 2, and the hook 3 and

the front wind channel 1 are set in an integrated manner. One end of the drying bracket 2 is connected onto the front wind channel 1 in a hanging manner, and the other end is connected with the bottom of the clothes drying drum or the bottom of the front wind channel 1. The hook 3 and the front wind channel 1 are set in an integrated manner. Under the premise of not influencing the mold stripping of the front wind channel 1 and the normal use of the hook 3, the mold stripping manner of the front wind channel 1 is improved, thereby eliminating the contradiction of the mold stripping directions of the hook 3 and the front wind channel 1. The mold cost is reduced, the production efficiency is improved, and the intensity of the hook is improved.

[0020] The hook 3 is arranged on the top of the inner wall 8 of the front wind channel, thereby reducing the scraping of clothes and avoiding the influence on the turnover of the clothes inside the drum. The opening of the hook 3 is toward the door body of the clothes dryer. When the drying bracket 2 is arranged from the outside to the inside, the hanging part of the drying bracket 2 is directly placed inside the opening of the hook 3 and is supported by the hook 3. The opening of the hook 3 is toward the door body of the clothes dryer, which facilitate the operation when users place the drying bracket 2 from the outside to the inside. Meanwhile, the opening of the hook 3 is toward the door body of the clothes dryer, thereby avoiding hooking on the clothes to influence on the turnover of clothes inside the drum.

[0021] The hook 3 includes a connecting part 4 and a supporting part 5, the connecting part 4 is formed by the extension of the inner wall 8 of the front wind channel towards the central axis direction of the clothes drying drum. The supporting part 5 is formed by the extension of the end part of the connecting part 4 towards the door body direction along the central axis direction of the drum. Namely, the hook 3 is of an L shape in a sectional view. One side of the L shape and the inner wall 8 of the front wind channel are injection molded in an integrated manner to form the connecting part 4, the other side of the L shape hangs in the air to form the supporting part 5 for hanging the drying bracket 2, and forms an opening together with the inner wall 8 of the front wind channel. The opening is towards the door body. Such a structure is simple, and manufactured easily by integrated molding. The structure facilitates users in taking and placing the drying bracket, and ensures strength.

[0022] The inside of the hook 3 is of a hollow structure, and the end of the hook 3 towards the clothes drying drum is of an open structure. The hook 3 is internally provided with a stiffened plate 6, and the stiffened plate 6 is arranged along an axial direction. Preferably, the inside of the connecting part 4 is of a hollow structure. The end part of the connecting part 4 toward the clothes drying drum is of an open structure, and the connecting part 4 is internally provided with a stiffened plate 6. The stiffened plate 6 is arranged along an axial direction. The stiffened plate 6 enhances the connecting strength be-

tween the hook 3 and the inner wall 8 of the front wind channel. The overall size is smaller than that of the structure in which the hook 3 and the front wind channel 1 are arranged in a separated manner. It is reduced in the possibility of scraping clothes and the consumption of raw materials. The arrangement along the axial direction does not influence the mold stripping in the manufacturing process.

[0023] The inner wall 8 of the front wind channel, except the position in which the hook 3 is located, inclines towards the direction far away from the central axis 9 from the door body to the clothes drying drum. And the inner wall 8 of the front wind channel where the hook 3 is located inclines towards the direction far away from the central axis 9 direction from the connecting part to the door body. The angle of inclination is a draft angle, and preferably, the angle of inclination is in a range of 1°-3°. In the manufacturing process, the mold stripping direction of most of the front wind channel 1 is from the door body to the clothes drying drum. Namely, except the mold stripping direction of the front wind channel 1 in which the hook 3 is located is from the door body to the clothes drying drum, the mold stripping direction of the position in which the hook 3 is located is in a reversed direction, that is, from the clothes drying drum to the door body.

[0024] The supporting part 5 of the hook 3 inclines towards the direction close to the central axis 9 from the connecting end connected with the connecting part 4 to the opening end towards the door body, which is more convenient for the mold stripping of most of the front wind channel 1 from the door body to the clothes drying drum, and for the mold stripping of the position in which the hook 3 is located from the clothes drying drum to the door body. Under the premise of not influencing the mold stripping of the front wind channel 1 and the normal use of the hook 3, the mold stripping mode of the front wind channel 1 is changed, thereby eliminating the contradiction of the mold stripping directions of the hook and the front wind channel. The front wind channel and the hook of the drying bracket are set in an integrated manner, thereby reducing the mold cost, improving the production efficiency, and improving the intensity of the hook.

[0025] Convex ribs 7 are arranged between the inclined planes with different inclining directions on the inner wall 8 of the front wind channel, and the convex ribs 7 are in smooth transition with the inclined planes on the two sides. Most of the front wind channel 1 strips mold from the door body to the clothes drying drum, and the position in which the hook 3 is located strips mold from the clothes drying drum to the door body, on the two sides of the hook 3 along the axial direction, and the inclined planes with different inclining directions are intersected to form corner angles. In the present disclosure, convex ribs 7 are arranged at the intersection point of inclined planes with different inclining directions, one side of the convex rib 7 is in smooth transition with the inclined plane which inclines toward the same direction,

and the other side is in smooth transition with the inclined plane which inclines toward the other direction. And the convex rib 7 changes two inclined planes which are connected vertically into two inclined planes in smooth transition, thereby avoiding the scraping of users on the clothes.

[0026] In the present disclosure, the front wind channel 1 and the hook 3 are injection molded in an integrated manner, and the normal mold stripping of the front wind channel 1 and the hook 3 are not influenced. As shown in Fig. 6 and Fig. 7, the mold stripping directions in the X region and the Y region are opposite. The mold stripping in the Y region in the inner wall of the front wind channel is from the door body to the clothes drying drum, while the mold stripping in the X region is from the clothes drying drum to the door body, thereby solving the problem that mold cannot be stripped due to the integrated arrangement of the front wind channel 1 and the hook 3. Meanwhile, the overall size in integrated arrangement is smaller than the size in which the hook 3 and the front wind channel 1 are arranged in a split manner, thereby reducing the possibility of scraping clothes, and reducing the consumption of raw materials.

[0027] The forgoing are merely preferred embodiments of the present disclosure. It should be noted that, for those of ordinary skill in the art, under the premise of not departing from the present disclosure, various transformations and improvements can still be made, and such transformations and improvements shall also be deemed as falling within the protection scope of the present disclosure.

Claims

1. A clothes dryer, comprising a clothes drying drum, a front wind channel and a door body, wherein the drying bracket is arranged in the clothes drying drum, one end of the drying bracket is connected onto the front wind channel in a hanging manner, the front wind channel is provided with a hook for connecting the drying bracket in a hanging manner, and the hook and the front wind channel are set in an integrated manner.
2. The clothes dryer according to claim 1, wherein the hook is arranged on a top of an inner wall of the front wind channel, and an opening of the hook is toward the door body of the clothes dryer.
3. The clothes dryer according to claim 1 or 2, wherein the hook comprises a connecting part and a supporting part, the connecting part is formed by an extension of the inner wall of the front wind channel towards a central axis direction of the clothes drying drum, and

the supporting part is formed by an extension of an end of the connecting part towards the door body along the central axis direction of the clothes drying drum.

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4. The clothes dryer according to any one of claims 1-3, wherein an inside of the hook is of a hollow structure, an end of the hook towards the clothes drying drum is of an open structure, the hook is internally provided with a stiffened plate, the stiffened plate is arranged along an axial direction, and preferably, an inside of the connecting part is of a hollow structure, an end of the connecting part toward the clothes drying drum is of an open structure, the connecting part is provided with a stiffened plate therein, and the stiffened plate is arranged along an axial direction.

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5. The clothes dryer according to any one of claims 1-4, wherein the inner wall of the front wind channel, except a position in which the hook is located, inclines towards a direction far away from the central axis from the door body to the clothes drying drum, and the inner wall of the front wind channel where the hook is located inclines towards a direction far away from the central axis direction from the connecting part to the door body.

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6. The clothes dryer according to any one of claims 1-5, wherein the supporting part of the hook inclines towards a direction close to the central axis from the connecting end connected with the connecting part to the opening end towards the door body.

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7. The clothes dryer according to claim 5 or 6, wherein an angle of inclination is a draft angle, and preferably, the angle of inclination is in a range of 1°-3°.

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8. The clothes dryer according to any one of claims 1-7, wherein two sides of the hook on the inner wall of the front wind channel are inclined planes with different inclining directions, convex ribs are arranged between the inclined planes with different inclining directions, and the convex ribs are in smooth transition with the inclined planes on the two sides.

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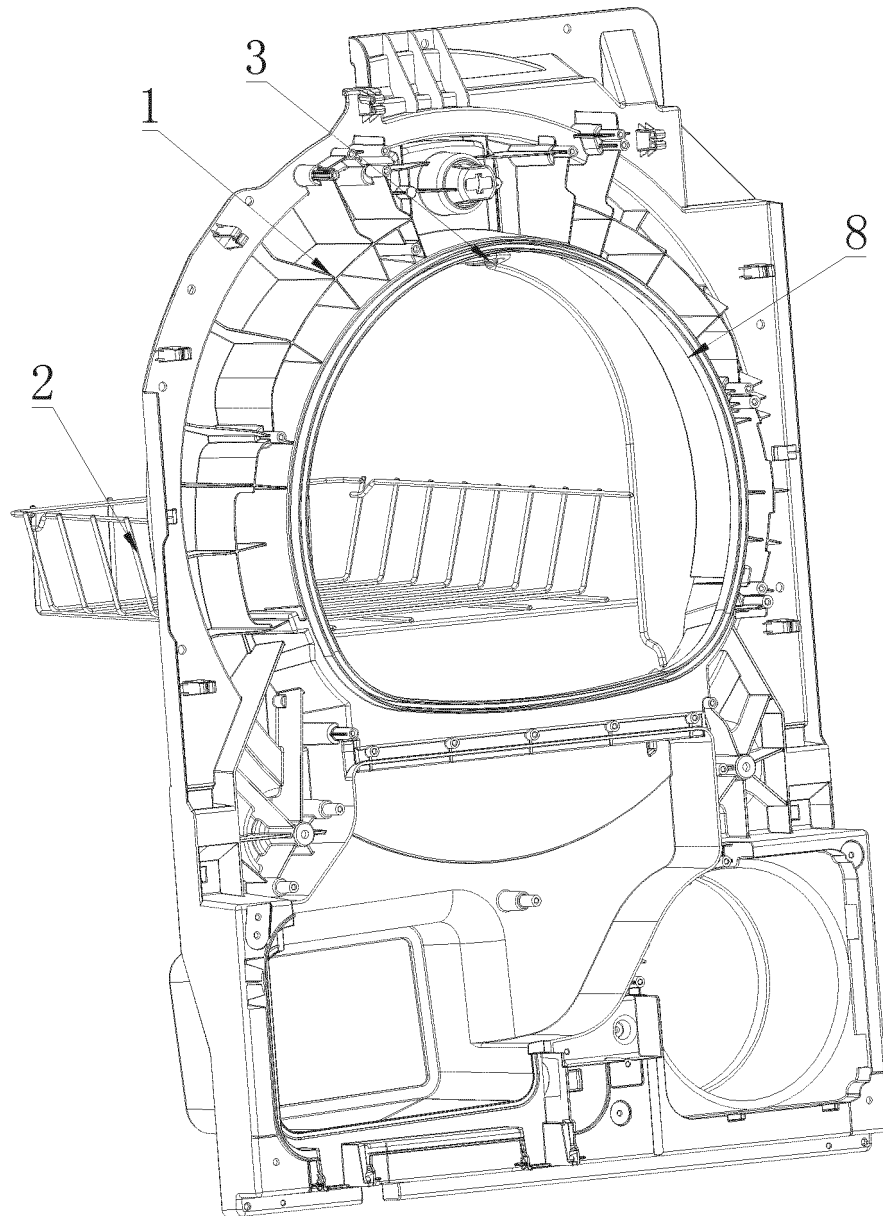


Fig. 1

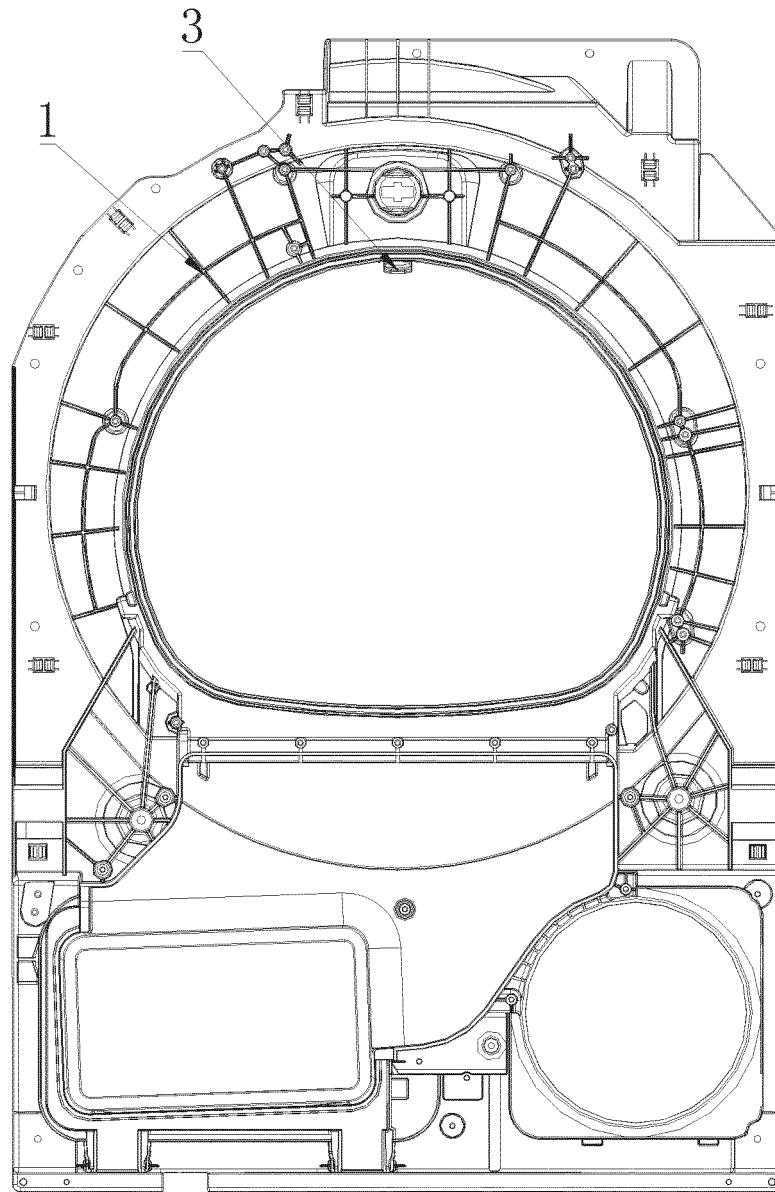


Fig. 2

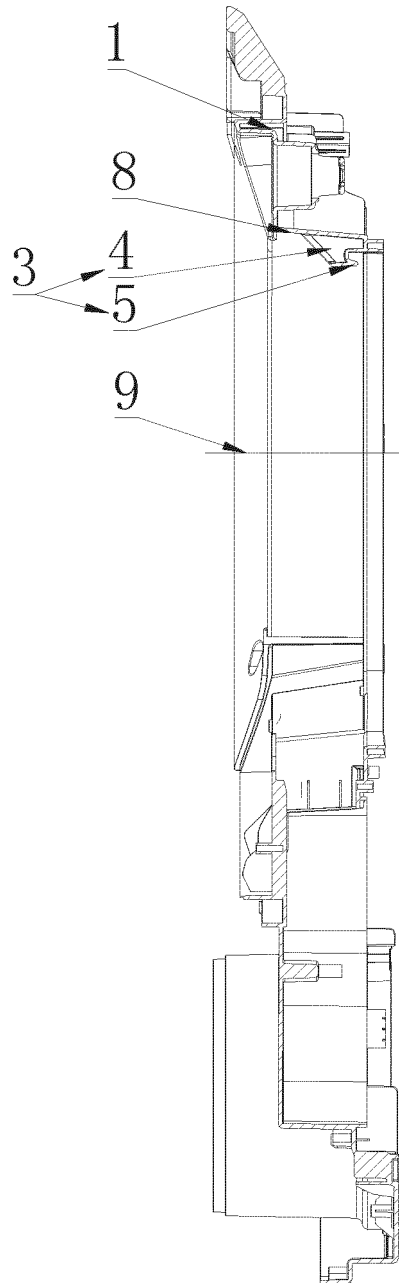


Fig. 3

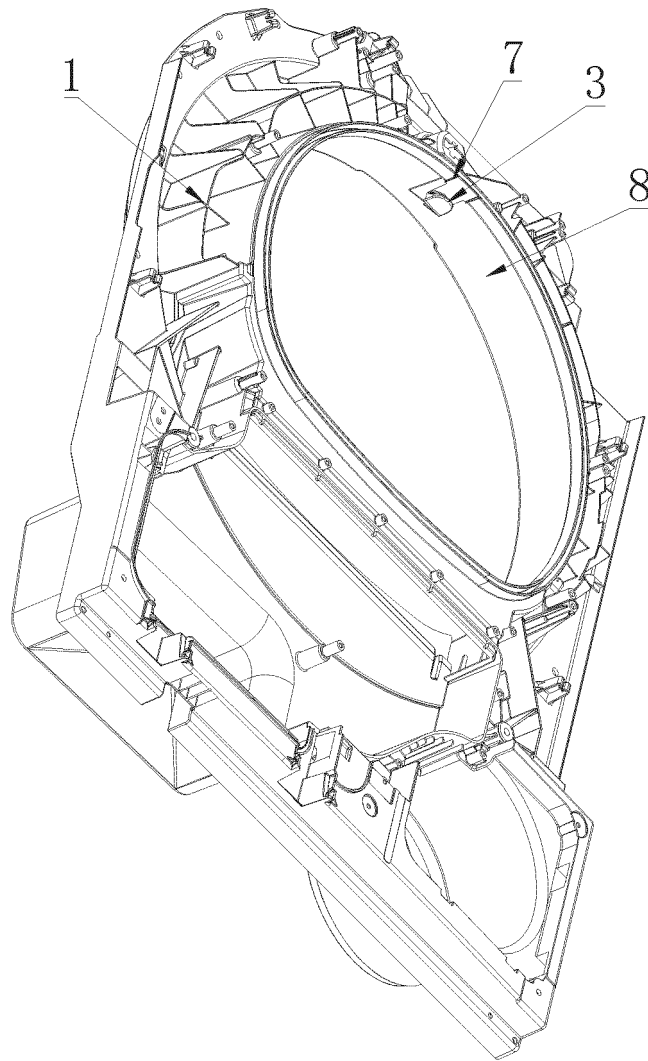


Fig. 4

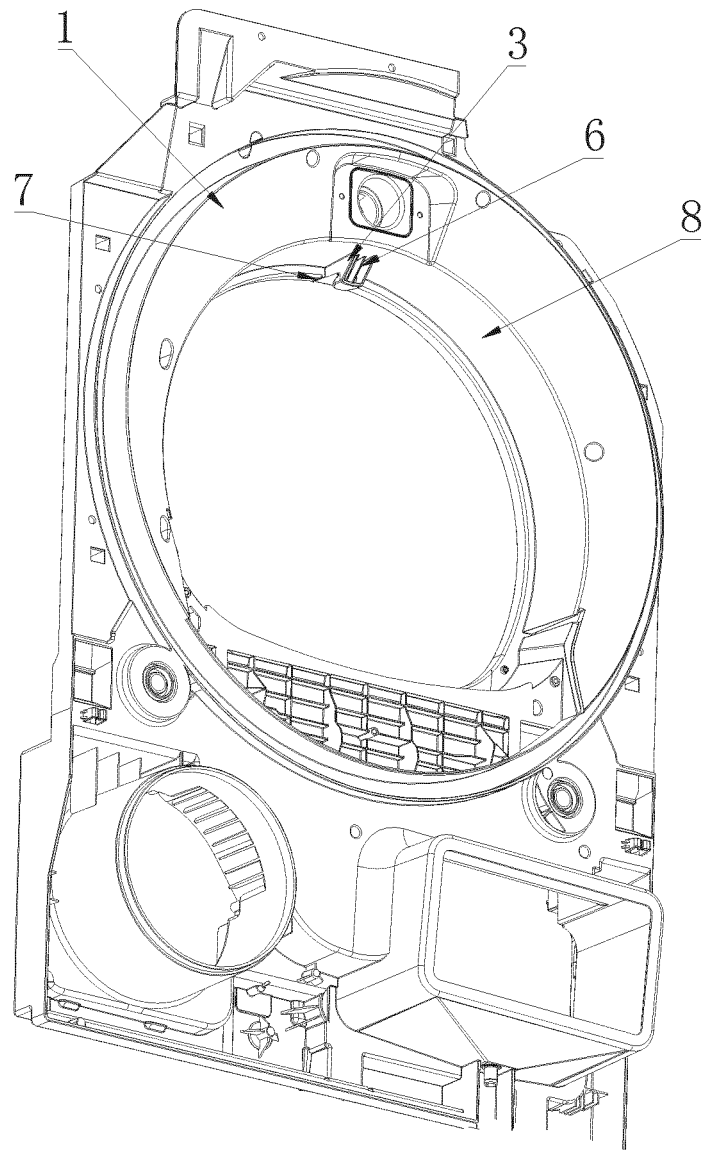


Fig. 5

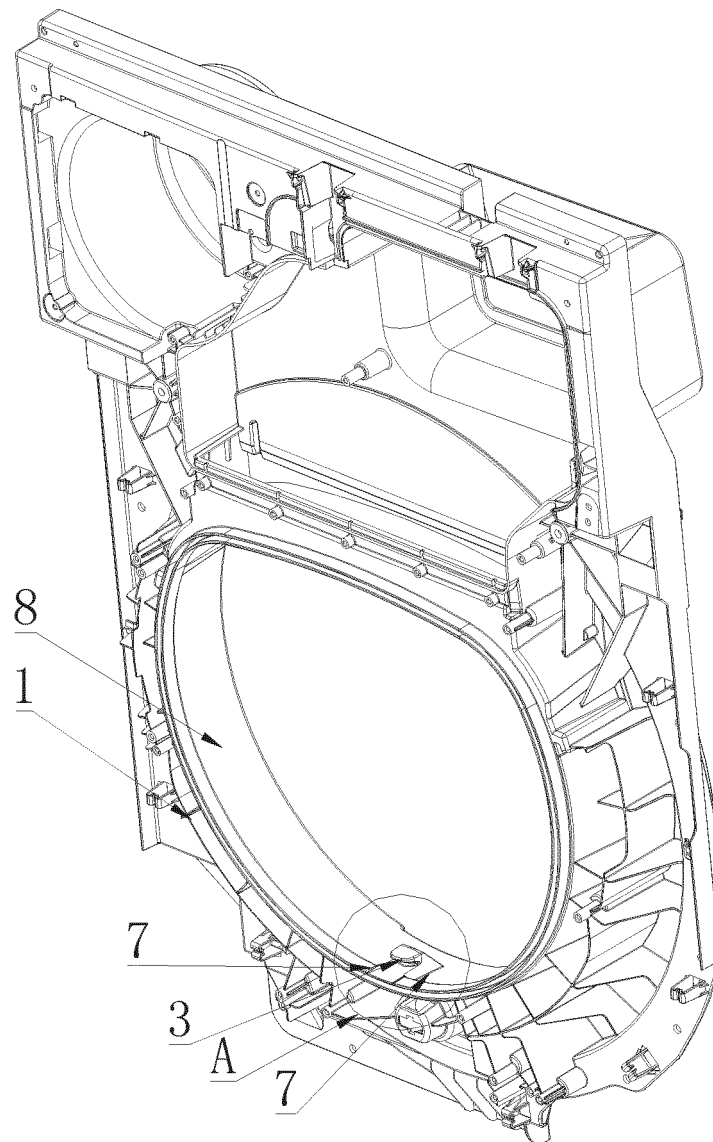


Fig. 6

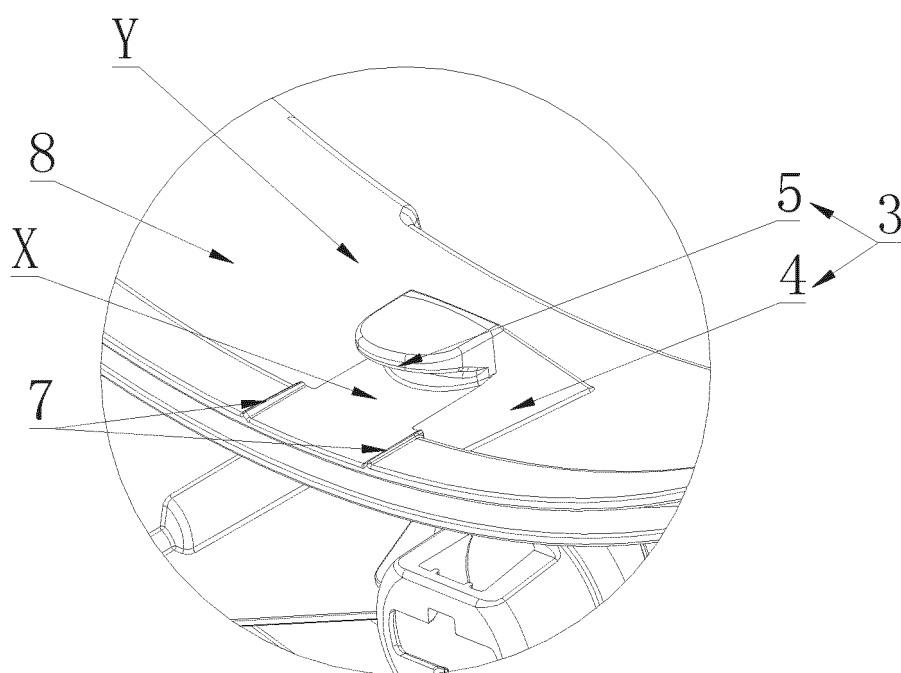


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2015/095303

A. CLASSIFICATION OF SUBJECT MATTER

D06F 58/02 (2006.01) i

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; A47L15

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)

CNXT, CNABS, SIPOABS, DWPI: HANG, INTEGRATE, HAIER, MOLD+ , MOULD+ , HOOK?, RACK?, DRY+, haier, one+,
drying

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP S5488973 U (HITACHI LTD.) 23 June 1979(23.06.1979) description, page 3, line 14 to page 4, line 18, and figures 1-3	1-8
A	US 2007089316 A1 (SAMSUNG ELECTRONICS CO., LTD.) 26 April 2007 (26.04.2007) whole document	1-8
A	US 6067723 A (MAYTAG CORP.) 30 May 2000(30.05.2000) the whole document	1-8
A	CN 1926277 A (BSH BOSCH SIEMENS HAUSGERAETE) 07 March 2007(07.03.2007) whole document	1-8

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 17 February 2016	Date of mailing of the international search report 01 March 2016
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer XU, Yan Telephone No. (86-10) 62084546

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2015/095303

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JPS 5077874 U (SANYO ELECTRIC CO) 05 July 1975(05.07.1975) the whole document	1-8

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