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(71) Applicants:
- **BSH Bosch und Siemens Hausgeräte GmbH**
  81739 München (DE)
- **BSW Household Appliances Co. Ltd.**
  Wuxi Jiangsu 214028 (CN)

(72) Inventors:
- **Ding, Ziqiang**
  214111 Wuxi Jiangsu (CN)
- **Tang, Huijun**
  2140000 Wuxi city, Jinangsu (CN)
- **Zhai, Yu**
  214111 Wuxi Jiangsu (CN)
- **Gao, Huan**
  214028 Wuxi Jiangsu (CN)

(54) Connection device of door of drum washing machine

(57) A connection device of a door (2) of a drum washing machine (1) is provided, which includes a hinge device (3) installed between a case body (11) and the door. The hinge device includes a hinge base (32) and a pair of hinge arms (33a,33b) made of a metal material and disposed on the hinge base. The hinge arms respectively include an upper surface (34a,34b). The upper surface of the hinge arms includes a slope structure (35a, 35b) preventing liquid collection. Therefore, during a washing process, washing water dropping on the hinge arms slides off the slope structure instead of collecting on the hinge arms, so as to prevent the hinge arms from being corroded and have their use life increased.

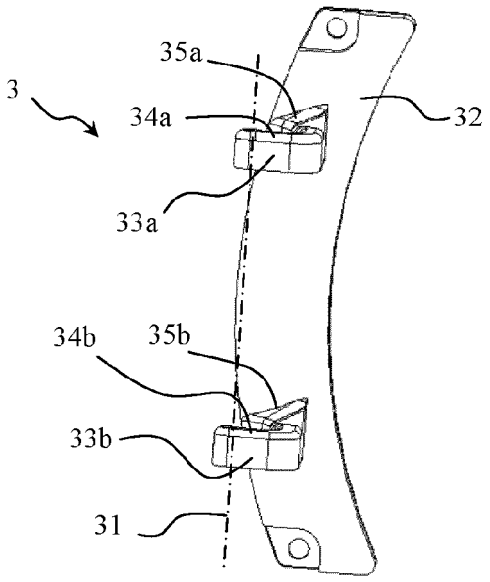

FIG. 2

EP 2 468 942 A1

Description

[0001] The present invention relates to a connection device of a door of a drum washing machine, and more particularly to a hinge device connected between a body of a door and a case body of a washing machine.

[0002] A drum washing machine usually includes a case body. An opening in communication with an inlet of a drum inside the case body is provided in the front of the case body. A door is installed in front of the case body through a hinge device and rotates about the hinge, so as to open or close the opening on the case body which is in communication with the drum. The hinge device includes a hinge base and a pair of hinge arms and disposed on the hinge base, and is generally made of a cast zinc alloy. The hinge arms are usually made of a metal material and include an upper surface which has an approximately planar structure.

[0003] During the operation process of the washing machine, the washing water may drop on the upper surface of the hinge arms. The acidic or alkaline washing water easily corrodes the hinge arms when staying at the hinge arms for a long time.

[0004] To prevent the hinge arms from being corroded, the hinges are usually electroplated to increase the corrosion resistance or other materials more resistant to corrosion than zinc alloys are used. However, the electroplating increases the cost while the hinges made of such other materials might fail to meet the desired strength requirement or increase the costs.

[0005] An objective of the present invention is to increase the corrosion resistance of a hinge device and increase the endurance thereof by adopting a low cost design.

[0006] For complying with the objective set out above, the technical solution according to the present invention is defined in the attached independent claim. Preferred embodiments of the invention are subjects of dependent claims, the subsequent description and the attached drawing.

[0007] Accordingly, the technical solution adopted by the present invention is as follows. A connection device of a door of a drum washing machine includes a hinge device installed between a case body and the door. The hinge device includes a hinge base and a pair of hinge arms made of a metal material and disposed on the hinge base. The hinge arms respectively include an upper surface. The upper surface of the hinge arms includes a slope structure preventing liquid collection.

[0008] A beneficial effect produced by adopting the technical solution is as follows. The upper surface of the hinge arms includes the slope structure preventing liquid collection, so the washing water dropping on the hinge arms slides off the slope structure instead of collecting on the hinge arms, so as to prevent the hinge arms from being corroded, and increase the use life of the hinge device. At the same time, almost no additional cost is incurred when the upper surface of the hinge arms is changed from a common planar design to a slope.

[0009] Preferably, the hinge device includes a basically vertical hinge axial line.

[0010] Preferably, the slope structure is inclined downwards along the upper surface of the hinge arms from a connection position between the hinge arms and the hinge base.

[0011] Preferably, the hinge device is manufactured of a zinc alloy.

[0012] Preferred embodiments of the invention are now described with referenced to the attached drawing. In the drawing,

FIG. 1 is a schematic front view of a drum washing machine;

FIG. 2 is a front view of a hinge device; and

FIG. 3 is a side view of a hinge device.

[0013] As shown in FIG. 1, a drum washing machine 1 includes a case body 11. A laundry loading opening (not shown) in communication with a drum (not shown) is provided in the front of the case body 11. A door 2 is installed on the case body 11 through a hinge device 3 in a rotatable manner, so as to open or close the laundry loading opening. The door 2 includes an annular door frame 21 and door glass 22 installed on the door frame 21. A handle 23 is installed on the door frame 21 for opening or closing the door 2. The hinge device 3 includes a basically vertical hinge axial line 31. The door 2 can rotate about the hinge axial line 31.

[0014] As shown in FIG. 2 and FIG. 3, the hinge device 3 made of zinc alloy material includes a hinge base 32 and a pair of hinge arms 33a, 33b. These hinge arms 33a, 33b disposed on the hinge base 32. The hinge base 32 is installed on the case body 11. The hinge arms 33a, 33b are installed with a rotating axis (not shown) at an end far away from the hinge base 32, and the rotating axis is connected to the door frame 21 at the same time.

[0015] The hinge arms 33a, 33b respectively include an upper surface 34a, 34b. At least a part of the upper surface 34a, 34b is a slope structure 35a, 35b preventing liquid collection. Preferably, the slope structures 35a, 35b are inclined downwards along the upper surface of the hinge arms 34a, 34b from a connection position between the hinge arms 33a, 33b and the hinge base 32.

Claims

1. A connection device of a door of a drum washing machine, comprising a hinge device installed between a case body and the door, wherein the hinge device comprises a hinge base and a pair of hinge arms made of a metal material and disposed on the hinge base, the hinge arms respectively comprise an upper surface, **characterized in that** the upper

surface of the hinge arm comprises a slope structure preventing liquid collection.

2. The connection device according to claim 1, **characterized in that** the hinge device comprises a basically vertical hinge axial line.

3. The connection device according to claim 1 or claim 2, **characterized in that** the slope structure is inclined downwards along the upper surface of the hinge arm from a connection position between the hinge arm and the hinge base.

4. The connection device according to any preceding claim, **characterized in that** the hinge device is made of zinc alloy.

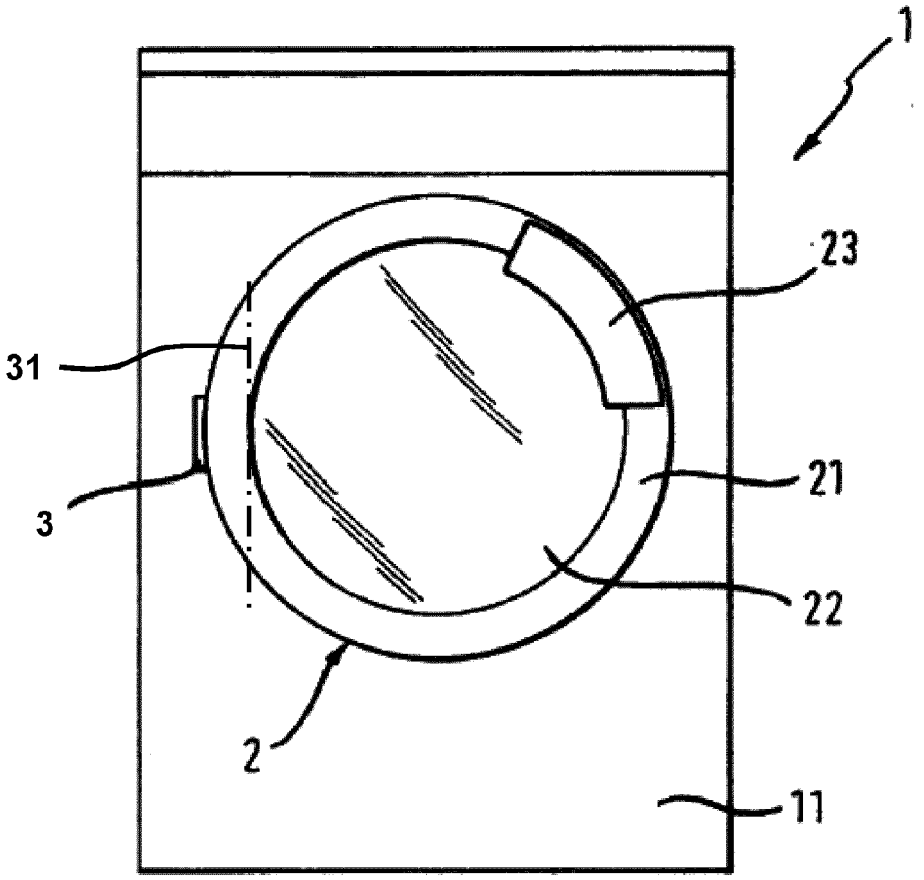

FIG. 1

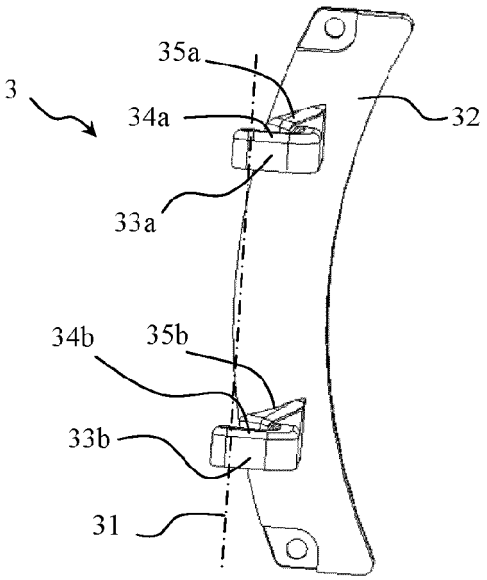

FIG. 2

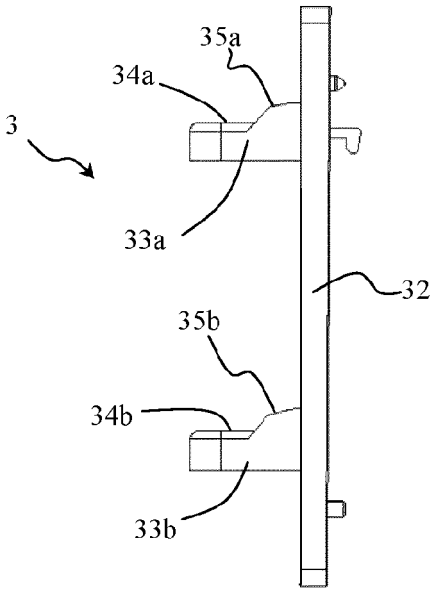

FIG. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 11 19 5462

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2009/126417 A1 (RIPLEY BRIAN DOUGLAS [US] ET AL) 21 May 2009 (2009-05-21) * the whole document *	1-4	INV. D06F39/14 E05D1/06
X	GB 941 134 A (ASS ELECT IND) 6 November 1963 (1963-11-06) * the whole document *	1-4	
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TECHNICAL FIELDS SEARCHED (IPC)
D06F
E05D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 March 2012	Spitzer, Bettina

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 19 5462

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82