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(54) **Washing machine**

(57) A washing machine 1 is provided with a tub 4 for containing a detergent and a rotatable drum 5 located inside the tub 4, where an inner surface 40 of the tub 4 is at least partially covered with an anti-sticking coating 10. Therefore, an adhesive force for washing dirt of the tub 4 is greatly reduced. Generally, washing dirt does not accumulate easily in a washing process since dirt ad-

hered temporarily is flushed away by shaking and striking of water flows. Meanwhile, if the washing machine 1 is further provided with a drum-cleaning program, a lot of high-speed water flow generated in the running of the cleaning program may desirably flush away accumulated washing dirt.

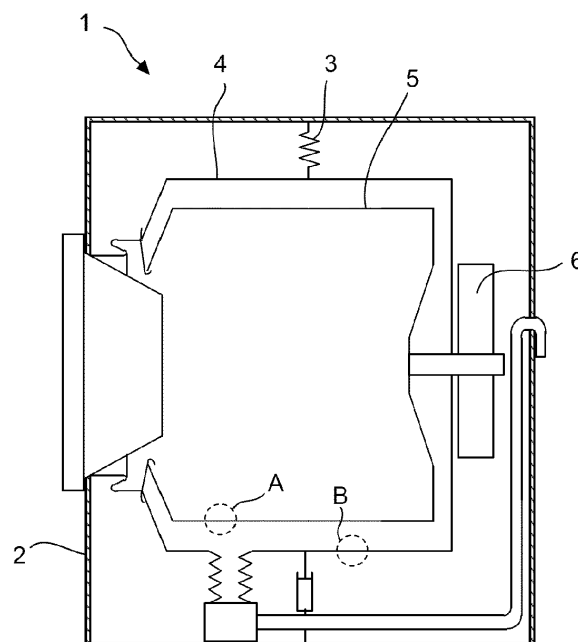


FIG. 1

Description

[0001] The present invention relates to a washing machine.

[0002] A washing machine generally includes a rotatable drum for containing laundry to be treated, a tub disposed around the drum, and a motor for driving the drum to rotate. A fluid for cleaning the laundry is mainly contained in the tub, and at least partially enters the drum to soak and clean the laundry in the drum.

[0003] Except for a water leakage hole formed on a drum, a drum and a tub are sealed from each other, and a user has no means to scrub any area in the tub but not in the interior of the drum, especially an inner surface of the tub. Even if some washing machines have drum-cleaning programs, it is only that some impact water flow is formed between the drum and the tub through the rotation of the drum to flush an outer surface of the drum and an inner surface of the tub. However, a mixture of fluff, foam, incompletely dissolved washing powder, scurf, and other washing dirt in a detergent in a laundry washing process has a strong adhesive force. Particularly, when the mixture accumulates to a certain extent, it becomes very difficult to flush away the mixture. A large amount of such washing dirt may accumulate persistently inside the tub, which could not only cause secondary pollution to laundry, but also encourage growth of bacteria, and erode metal components.

[0004] The objective of the present invention is to avoid washing dirt to accumulate inside a tub.

[0005] Documents WO 2009/103785 A1 and EP 2 321 456 B1 each disclose an easy-to-clean coating applied to a heat exchanger of a laundry dryer, for facilitating cleaning this heat exchanger by rinsing.

[0006] For the foregoing objective, a technical solution is provided by the present invention as defined in the attached independent claim. Preferred embodiments and improvements of the invention, all as available for facultative combination with the features of the invention, are defined in dependent claims as well as in the subsequent disclosure, and exhibited in the accompanying drawing.

[0007] Accordingly, the solution adopted in the present invention is as follows: A washing machine, provided with a tub for containing a detergent solution and a rotatable drum located inside the tub, wherein an inner surface of the tub is at least partially covered with an anti-sticking coating.

[0008] As a possible further improvement of the present invention, an outer surface of the drum is at least partially covered with an anti-sticking coating.

[0009] The coating may be a nanometer coating, a ceramic coating, a carbon film or an organosilicone coating, where the carbon film may be made of amorphous carbon.

[0010] As the inner surface of the tub is at least partially covered with an anti-sticking coating, an adhesive force of washing dirt of the tub is greatly reduced. Generally,

washing dirt is prevented from accumulating on the surface easily in a washing process since washing dirt adhered temporarily is flushed away by shaking and striking of water flows. Meanwhile, if the washing machine is further provided with a drum-cleaning program, a lot of high-speed water flow generated in the running of the drum-cleaning program may desirably flush away accumulated washing dirt.

[0011] In addition, the outer surface of the drum may be also partially covered with an anti-sticking coating, so that the outer surface of the drum can be desirably kept clean as well.

[0012] The disclosure will become more fully understood from the detailed description of preferred embodiments exhibited in the accompanying drawing which is given hereinbelow for illustration only, and thus is not limitative of the disclosure in relation to the invention. In the drawing:

FIG. 1 is a schematic structural view of a washing machine;

FIG. 2 is an enlarged view of a dotted area A in FIG. 1; and

FIG. 3 is an enlarged view of a dotted area B in FIG. 1.

[0013] A washing machine 1 shown in FIG. 1 has a case body 2. A tub 4 is disposed inside the case body 2 in a suspended manner through a damping apparatus 3. The tub 4 may contain a fluid for cleaning laundry, in particular a detergent solution. A drum 5 is disposed inside the tub 4 and is rotatable under the driving of a motor 6. A washing operation is preformed on laundry in the drum 5.

[0014] An inner surface 40 of the tub 4 and an outer surface 50 of the drum 5 are covered with anti-sticking coatings 10 shown in FIG. 2 and FIG. 3.

[0015] There may be multiple choices for the material of the anti-sticking coating 10. For example, the material may be organosilicone, ceramic, amorphous carbon film, and the like, and more desirably a nanometer material. These materials are hydrophobic and have a low skin-friction coefficient, so that they are easy to clean and are corrosion resistant. Therefore, washing dirt does not accumulate easily on the drum and the tub, making laundry after washing cleaner and more hygienic.

[0016] Various specific implementation manners described in the foregoing and shown in the Figures of the accompanying drawing are only used for illustrating the present invention rather than to be the entire present invention. Within the scope of the basic technical concept of the present invention, any forms of variations made to the present invention by a person of ordinary skill in the art shall fall within the protection scope of the present invention.

List of Reference Numerals

[0017]

1	Washing machine	
2	Case body	
3	Damping apparatus	
4	Tub	
5	Drum	5
6	Motor	
10	Anti-sticking coating	
40	Inner surface of tub	
50	Outer surface of drum	10

Claims

1. A washing machine (1), provided with a tub (4) for containing a detergent solution and a rotatable drum (5) located inside the tub (4), **characterized in that:** an inner surface (40) of the tub (4) is at least partially covered with an anti-sticking coating (10). 15
2. The washing machine (1) according to claim 1, **characterized in that:** an outer surface (50) of the drum (5) is at least partially covered with an anti-sticking coating (10). 20
3. The washing machine (1) according to claim 1 or 2, **characterized in that:** the coating (10) is a nanometer coating (10), a ceramic coating (10), a carbon film (10) or an organosilicone coating (10). 25
4. The washing machine (1) according to claim 3, **characterized in that:** the carbon film (10) is made of amorphous carbon. 30

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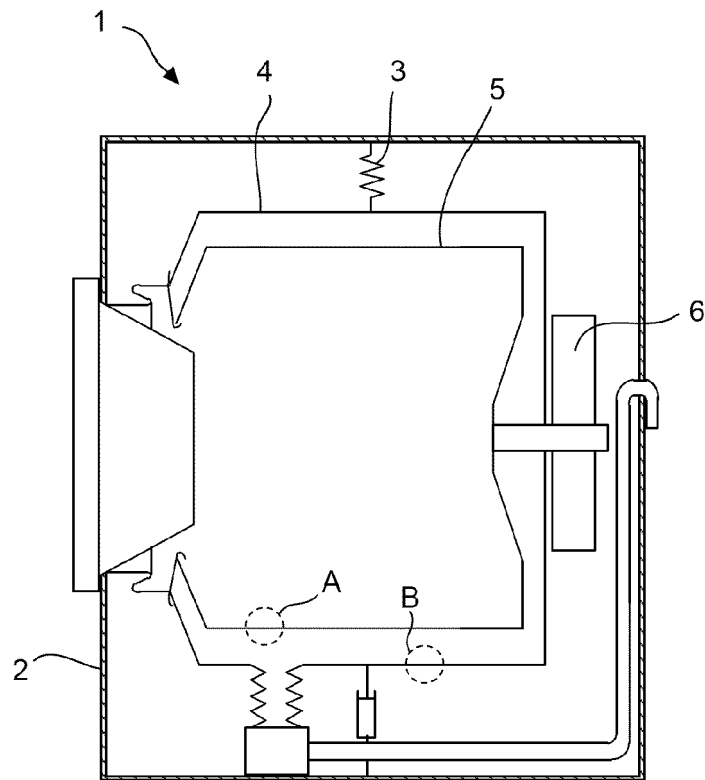


FIG. 1

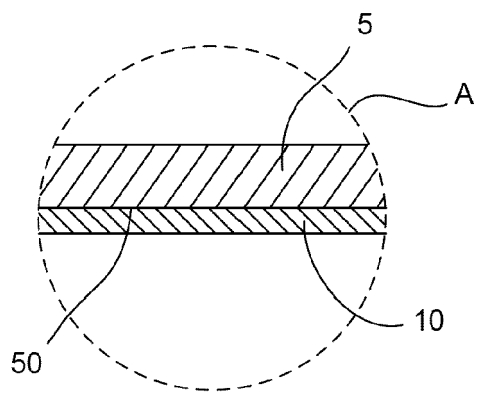


FIG. 2

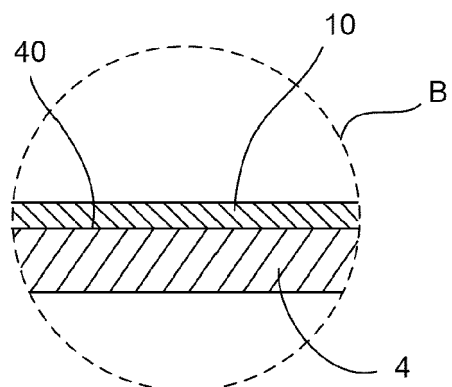


FIG. 3



EUROPEAN SEARCH REPORT

Application Number
EP 14 18 8323

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A	EP 1 391 249 A1 (SCHOTT GLAS [DE]; ZEISS CARL STIFTUNGSTRADING AS [DE]) 25 February 2004 (2004-02-25) * paragraph [0002] - paragraph [0011] * * paragraph [0017] * * paragraph [0028] - paragraph [0032] *	1-3	
			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 12 February 2015	Examiner Sabatucci, Arianna
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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