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(54) **WASHING METHOD FOR WASHING MACHINE**

(57) The present disclosure discloses a washing method of a washing machine. The washing method comprises the following steps: a, identifying information of the laundry tags when laundries with laundry tags are placed into the washing machine, and screening the laundries according to the acquired information of the laundry tags; b, starting the washing machine, and determining a washing program according to the acquired information of the laundry tags in the step a; and c, identifying the information of the laundry tags again before water inflow of the washing machine, and screening the laundries and determining the washing program according to the acquired information of the laundry tags in the step c. By using the washing method of the washing machine, the laundry identification rate of the washing machine can be increased, the misreading rate can be reduced, and the washed laundry washing effect can be improved.

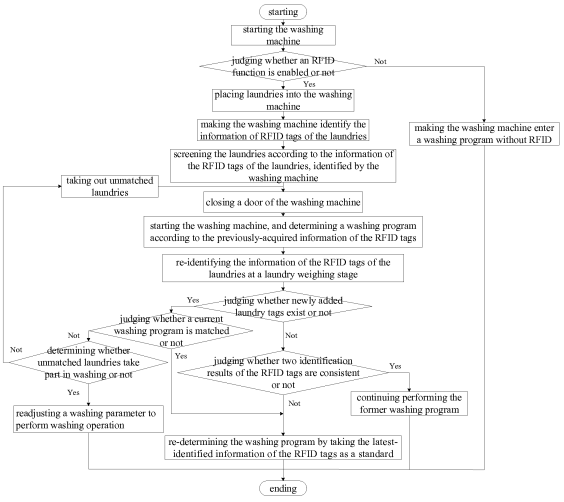

Fig. 1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of household appliances and specifically relates to a washing method of a washing machine.

BACKGROUND

[0002] In the prior art, an RFID (Radio Frequency Identification) technology is used in order to realize the identification of the texture of laundry; the RFID technology is also known as radio frequency identification. According to the RFID technology, an RFID tag with a unique identification code can be sewn on the laundry, the ID serial number of the RFID tag is in one-to-one correspondence to the information of the laundry, and the information of the laundry can be accurately retrieved if only the information of the tag can be identified by the washing machine, so that the way has practical feasibility for identifying the texture of the laundry. For the RFID technology for the washing machine, unwashed laundries may be misread by the washing machine when the laundries are placed by a user or the RFID tag is only identified once to result in low identification rate, finally, a washing parameter acquired by the washing machine is inaccurate, and thus, the washed laundries washing effect of the washing machine may be affected.

[0003] In view of this, it is necessary to provide a novel washing method of a washing machine to overcome or relieve the defect.

SUMMARY

[0004] The present disclosure aims at providing a washing method of a washing machine, by which the laundry identification rate of the washing machine can be increased, the misreading rate can be reduced, and the washed laundry washing effect can be improved.

[0005] In order to achieve the aim, the present disclosure provides the washing method of the washing machine, comprising the following steps:

a, identifying information of the laundry tags when laundries with laundry tags are placed into the washing machine, and screening the laundries according to the acquired information of the laundry tags;

b, starting the washing machine, and determining a washing program according to the acquired information of the laundry tags in the step a; and

c, identifying the information of the laundry tags again before water inflow of the washing machine, and screening the laundries and determining the washing program according to the acquired information of the laundry tags in the step c.

[0006] Preferably, before the step a, the washing method further comprises the following steps: selecting whether a function for the laundry tag identification of the washing machine is required to be enabled or not by a user, if not, entering a washing program without laundry tag identification; and if yes, enabling the function for the laundry tag identification of the washing machine, and entering the step a.

[0007] Preferably, the identifying the information of the laundry tags again in the step c comprises: judging whether information of newly added laundry tags exists or not, if yes, entering a step c1, and if not, entering a step c2. Wherein the step c1 comprises: judging whether laundries corresponding to the newly added laundry tags are matched with a current washing program or not, if the laundries corresponding to the newly added laundry tags are unmatched with the current washing program, reminding the user to determine whether unmatched laundries take part in the current washing program or not, and if the laundries corresponding to the newly added laundry tags are matched with the current washing program, readjusting a washing parameter to perform washing operation. And the step c2 comprises: comparing whether the acquired information of the laundry tags in the step c is consistent with the acquired information of the laundry tags in the step a or not, if the acquired information of the laundry tags in the step c is consistent with the acquired information of the laundry tags in the step a, performing the washing operation according to the washing program determined in the step b, and if the acquired information of the laundry tags in the step c is inconsistent with the acquired information of the laundry tags in the step a, re-determining the washing program according to the acquired information of the laundry tags in the step c.

[0008] Preferably, after the user is reminded to determine whether the unmatched laundries take part in the current washing program or not in the step c1, if the user determines that the unmatched laundries take part in the current washing program, the washing parameter is readjusted to perform the washing operation, and if the user determines that the unmatched laundries do not take part in the current washing program, the unmatched laundries are taken out, and the step b is re-performed.

[0009] Preferably, the washing method further comprises a step of closing a door of the washing machine between the step a and the step b.

[0010] Preferably, the identifying the information of the laundry tags again before water inflow of the washing machine happens at the stage that the laundries are weighed by the washing machine.

[0011] Preferably, the laundry tags are RFID tags.

[0012] Preferably, in the washing method of the washing machine, the information of the RFID tags is identified by an RFID antenna on the washing machine.

[0013] Preferably, the identified information of the RFID tags is transmitted to a washing machine controller by the RFID antenna by virtue of an RFID reader on the washing machine after the information of the RFID tags

is identified by the RFID antenna on the washing machine, so that a corresponding washing program is made by the washing machine controller according to the acquired information of the RFID tags.

[0014] Compared with the prior art, the washing method has the following advantages:
the information of the laundry tags is separately identified in the steps a and c according to the washing method of the washing machine, so that the information of the laundries may be determined by identifying the information of the laundry tags twice; and due to the adoption of two-time identification, the accurate degree of identification is increased, and the phenomena of misreading and low identification rate caused by one-time identification in the prior art may be obviously reduced.

[0015] Other characteristics and advantages of the washing method will be described in detail in the subsequent detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In order to more clearly describe the detailed description of the present disclosure or the technical solution in the prior art, accompanying drawings required to be used in the description of the detailed description or the prior art are simply introduced below, it is apparent that the accompanying drawings described below are some embodiments of the present disclosure, and other accompanying drawings may also be obtained according to the accompanying drawings by the ordinary skilled in the art without creative effort.

[0017] Fig. 1 is a flow diagram of a washing method of a washing machine according to a preferred embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0018] The detailed description of the present disclosure is described below in detail in combination with accompanying drawings. It should be understood that the embodiments described herein are merely used for describing and explaining, rather than limiting the present disclosure.

[0019] Referring to Fig. 1, the present disclosure provides a washing method of a washing machine, comprising the following steps: a, identifying information of the laundry tags when laundry with laundry tags are placed into the washing machine, and screening the laundries according to the acquired information of the laundry tags; b, starting the washing machine, and determining a washing program according to the acquired information of the laundry tags in the step a; and c, identifying the information of the laundry tags again before water inflow of the washing machine, and screening the laundries and determining the washing program according to the acquired information of the laundry tags in the step c, wherein the washing method may further comprise a step of closing a door of the washing machine between the step a and the step b.

[0020] As described above, the information of the laundry tags is separately identified in the steps a and c according to the washing method of the washing machine, so that the information of the laundries may be determined by identifying the information of the laundry tags twice; and due to the adoption of two-time identification, the accurate degree of identification is increased, and the phenomena of misreading and low identification rate caused by one-time identification in the prior art may be obviously reduced.

[0021] Identifying the information of the laundry tags again before water inflow of the washing machine, which is mentioned above, may happen at the stage that the laundries are weighed by the washing machine, of course, the present disclosure is not limited herein, and the identification may happen at any stage between laundries placing and water inflow. The core technical conception of the present disclosure lies in second information identification of the laundry tags before water inflow, rather than the specific stage that the second information identification of the laundry tags takes place.

[0022] According to the preferred embodiments of the present disclosure, the laundry tags are RFID tags. Of course, the present disclosure is not limited herein, and laundry tags which adopt other technologies and may be identified are also protected by the present disclosure.

[0023] In addition, before the step a, the washing method may further comprise the following steps: selecting whether a function for the laundry tag identification of the washing machine is required to be enabled or not by a user, if not, entering a washing program (namely, an ordinary washing program) without laundry tag identification; and if yes, enabling the function for the laundry tag identification of the washing machine, and entering the step a (namely, the washing program with laundry tag identification).

[0024] Specifically, identifying the information of the laundry tags again in the step c comprises: judging whether information of newly added laundry tags exists or not, if yes, entering a step c1, and if not, entering a step c2. Wherein the step c1 comprises: judging whether laundries corresponding to the newly added laundry tags are matched with a current washing program or not (namely, whether the laundries are suitable for the current washing program), if the laundries corresponding to the newly added laundry tags are unmatched with the current washing program, reminding the user to determine whether unmatched laundries take part in the current washing program or not (namely, whether the laundries with the newly added laundry tags are required to take part in current washing or not), and if the user determines that the unmatched laundries take part in the current washing program, readjusting a washing parameter to perform washing operation (the washing machine is capable of analyzing the information of the laundry tags and acquiring the corresponding washing parameter according to a corresponding algorithm, which is not de-

scribed in detail herein), if the user determines that the unmatched laundries do not take part in the current washing program, making the unmatched laundries be taken out, and re-entering the step b; if the laundries corresponding to the newly added laundry tags are matched with the current washing program, readjusting the washing parameter to perform the washing operation.

[0025] The step c2 comprises: comparing whether the acquired information of the laundry tags in the step c is consistent with the acquired information of the laundry tags in the step a or not, if the acquired information of the laundry tags in the step c is consistent with the acquired information of the laundry tags in the step a, performing the washing operation according to the washing program determined in the step b, and if the acquired information of the laundry tags in the step c is inconsistent with the acquired information of the laundry tags in the step a, re-determining the washing program according to the acquired information of the laundry tags in the step c, in other words, re-determining the washing program by taking the latest-identified information of the laundry tags as a standard.

[0026] According to the embodiments of the present disclosure, the information of the RFID tags is identified by an RFID antenna on the washing machine in the washing method of the washing machine. The identified information of the RFID tags is transmitted to a washing machine controller by the RFID antenna by virtue of an RFID reader on the washing machine after the information of the RFID tags is identified by the RFID antenna on the washing machine, so that a corresponding washing program is made by the washing machine controller according to the acquired information of the RFID tags. Of course, the washing machine controller may be connected to a washing machine display screen so that the information is displayed for the user.

[0027] The washing operation is ended after all the washing operations are finished.

[0028] Obviously, the embodiments are merely intended to clearly describe the examples, rather than limit the embodiments. Other different forms of variations or alterations may be made by the ordinary skilled in the art on the basis of the description. It is unnecessary and unable to exhaustively describe all the embodiments herein. While the apparent variations or alterations derived therefrom still fall within the scope of the present disclosure.

Claims

1. A washing method of a washing machine, comprising following steps:

   step a, identifying information of laundry tags when laundries with the laundry tags are placed into the washing machine, and screening the laundry according to the information of the laundry tags acquired;

   step b, starting the washing machine, and determining a washing program according to the information of the laundry tags acquired in the step a; and

   step c, identifying information of the laundry tags again before water inflow of the washing machine, and screening the laundries and determining a washing program according to the information of the laundry tags acquired in the step c.

2. The washing method of the washing machine according to claim 1, before the step a, further comprising following steps:

   selecting whether a function for a laundry tag identification of the washing machine is required to be enabled or not by a user,

   if not, entering a washing program without the laundry tag identification; and

   if yes, enabling the function for the laundry tag identification of the washing machine, and entering the step a.

3. The washing method of the washing machine according to claim 1, wherein identifying the information of the laundry tags again in the step c comprises:

   judging whether information of newly added laundry tags exists or not, if yes, entering a step c1, and if not, entering a step c2, wherein

   the step c1, judging whether laundries corresponding to the newly added laundry tags are matched with a washing program determined or not,

   if not, reminding a user to determine whether unmatched laundry take part in the current washing program or not, and if yes, readjusting a washing parameter of the washing program determined to perform; and

   the step c2, comparing whether the information of the laundry tags acquired in the step c is consistent with the information of the laundry tags acquired in the step a or not,

   if yes, performing the washing program determined in the step b, and

   if no, re-determining the washing program according to the information of the laundry tags acquired in the step c.

4. The washing method of the washing machine according to claim 3, wherein the step c1 comprises, after reminding the user to determine whether the unmatched laundries take part in the washing program determined or not,

   if the user determines that the unmatched laundries take part in the washing program determined, readjusting the washing parameter of the washing program to perform, and

if the user determines that the unmatched laundries do not take part in the washing program determined, taking out the unmatched laundries, and re-performing the step b.

5. The washing method of the washing machine according to claim 1, further comprising a step of closing a door of the washing machine between the step a and the step b.

6. The washing method of the washing machine according to claim 1, wherein before water inflow of the washing machine, identifying the information of the laundry tags again is performed at a stage that the laundries are weighed by the washing machine.

7. The washing method of the washing machine according to any one of claims 1-6, wherein the laundry tags are RFID tags.

8. The washing method of the washing machine according to claim 7, wherein information of the RFID tags is identified by an RFID antenna on the washing machine.

9. The washing method of the washing machine according to claim 8, wherein the information of the RFID tags identified is transmitted to a washing machine controller by the RFID antenna by virtue of an RFID reader on the washing machine after the information of the RFID tags is identified by the RFID antenna on the washing machine, and
a corresponding washing program is made by the washing machine controller according to the information of the RFID tags acquired.

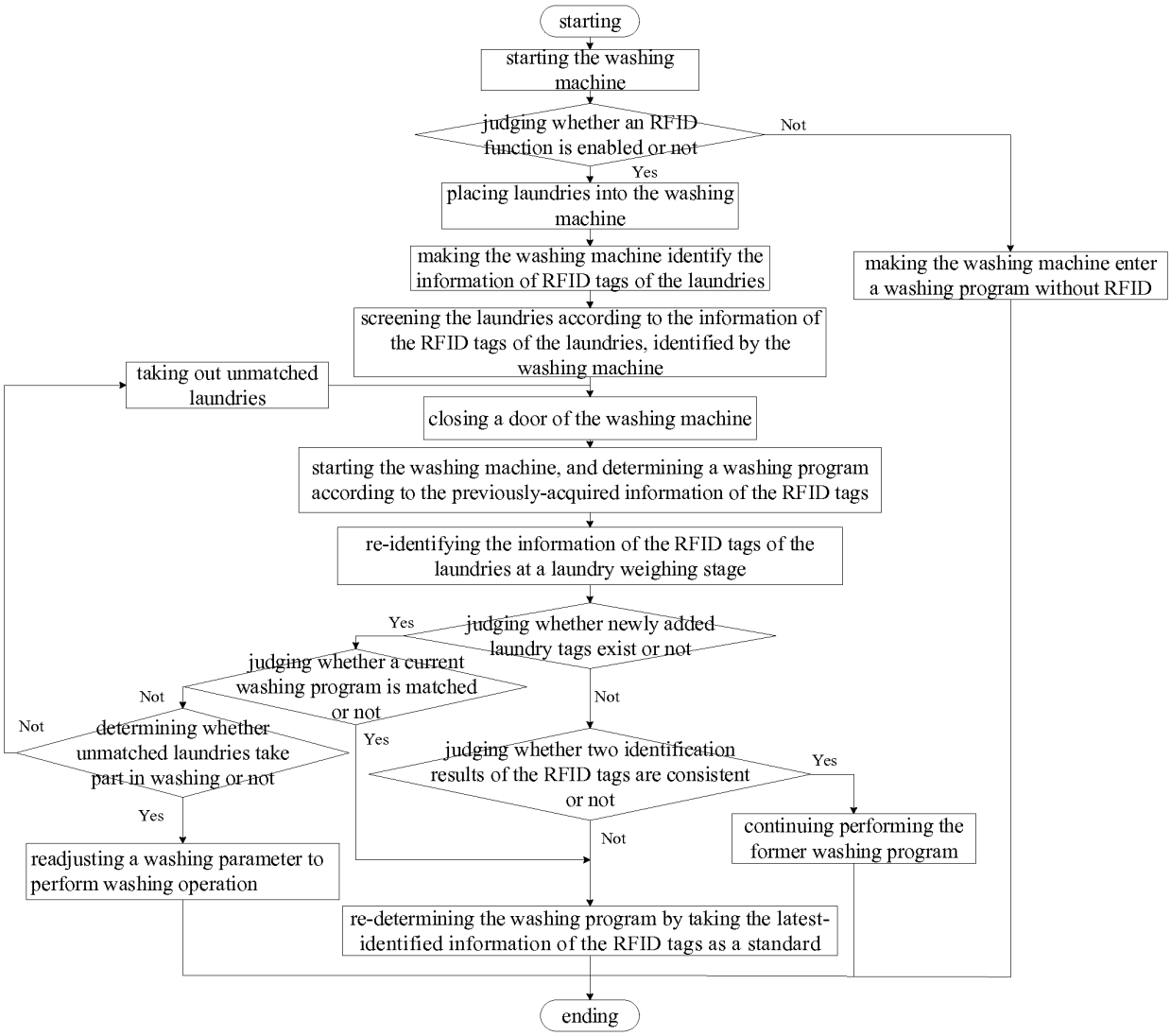
starting
starting the washing machine
judging whether an RFID function is enabled or not
Not
Yes
placing laundries into the washing machine
making the washing machine identify the information of RFID tags of the laundries
making the washing machine enter a washing program without RFID
screening the laundries according to the information of the RFID tags of the laundries, identified by the washing machine
taking out unmatched laundries
closing a door of the washing machine
starting the washing machine, and determining a washing program according to the previously-acquired information of the RFID tags
re-identifying the information of the RFID tags of the laundries at a laundry weighing stage
Yes
judging whether newly added laundry tags exist or not
judging whether a current washing program is matched or not
Not
Not
Not
determining whether unmatched laundries take part in washing or not
Yes
Yes
judging whether two identification results of the RFID tags are consistent or not
Yes
Not
continuing performing the former washing program
readjusting a washing parameter to perform washing operation
re-determining the washing program by taking the latest-identified information of the RFID tags as a standard
ending

Fig. 1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2017/106402

A. CLASSIFICATION OF SUBJECT MATTER

D06F 33/02 (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

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)

EPODOC, WPI, CNPAT, CNKI: 海尔, 洗衣, 衣物, 程序, 方法, 标签, 识别, 读取, 选择; 二次, 再次, 复核; washing, laundry, program, label, identify+, read, choice, check, double, information.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 101886322 A (HAIER GROUP CORPORATION et al.), 17 November 2010 (17.11.2010), description, paragraphs 39-57, and figure 3	1-9
A	CN 103820971 A (DONGHUA UNIVERSITY et al.), 28 May 2014 (28.05.2014), entire document	1-9
A	CN 1888221 A (LG ELECTRONICS (TIANJIN) ELECTRICAL APPLIANCES CO., LTD.), 03 January 2007 (03.01.2007), entire document	1-9
A	CN 105401382 A (QINGDAO HAIER WASHING MACHINE CO., LTD.), 16 March 2016 (16.03.2016), entire document	1-9
A	JP 4652123 B2 (HITACHI L.T.D), 16 March 2011 (16.03.2011), entire document	1-9
A	DE 10134534 A1 (LAMPL, B. et al.), 13 February 2003 (13.02.2003), entire document	1-9

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"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

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"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 December 2017	15 January 2018

Name and mailing address of the ISA	Authorized officer
State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	ZHU, Yingzhuo Telephone No. (86-10) 010-62413216

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2017/106402

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 101886322 A	17 November 2010	None	
CN 103820971 A	28 May 2014	CN 103820971 B	20 January 2016
CN 1888221 A	03 January 2007	None	
CN 105401382 A	16 March 2016	None	
JP 4652123 B2	16 March 2011	JP 2006320472 A	30 November 2006
DE 10134534 A1	13 February 2003	None	

Form PCT/ISA/210 (patent family annex) (July 2009)