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(72) Inventors:
• **ÖZEN, Erol**
45030 Manisa (TR)
• **ÖCAL, Ömür**
45030 Manisa (TR)

(74) Representative: **Ascherl, Andreas et al**
KEHL, ASCHERL, LIEBHOFF & ETTMAYR
Patentanwälte - Partnerschaft
Emil-Riedel-Strasse 18
80538 München (DE)

(71) Applicant: **Vestel Elektronik Sanayi ve Ticaret A.S.**
45030 Manisa (TR)

(54) **A WASHING MACHINE, AND A METHOD FOR PROVIDING A MECHANISM FOR PAUSING AND RESUMING A CURRENT WASH CYCLE OF CLOTHES IN THE WASHING MACHINE**

(57) The present invention refers to a washing machine (1). Said washing machine (1) comprises a drum (2) adapted to receive clothes and to rotate for washing the clothes, the drum (2) includes a storing flap (3) adapted to open or close for transferring clothes into the drum (2) or out of the drum (2), a storing box (4) adapted to cooperate with the drum (3) to receive one or more clothes from the drum (2) or to provide back the clothes to the drum (2) on opening of the storing flap (3), a control interface (5) adapted to receive a control input (6) related to pausing a washing cycle of the clothes from an user, a controller (9) adapted to receive the control input (6) from the control interface (5), to enable opening of the storing flap (4) based on the control input (6) for allowing transfer of the clothes between the drum (2) and the storing box (4), and to collect one or more washing parameters (7) at time of receiving the control input (6), wherein the washing parameters (7) comprises at least one of water level, temperature, time, detergent level, a washing cycle pre-program type, or a combination thereof.

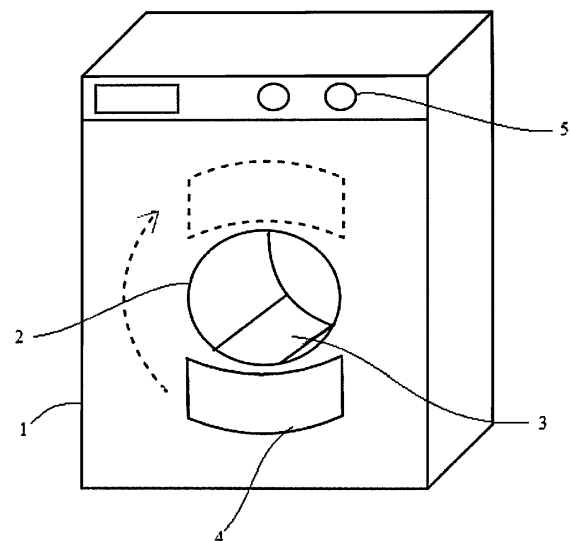


Fig.1

Description

[0001] This invention refers to a washing machine according to claim 1, and a method for providing a mechanism for pausing and resuming a current wash cycle of clothes in the washing machine according to claim 9.

Background of the Invention

[0002] In conventional washing machines a user can not disturb the washing program. When the user puts the laundry and starts the machine, he/she can not cancel the program or start a new washing with different laundries without taking them out.

[0003] In modern life time and energy consumption is very critical. Most of users have limited time for daily works such as washing. When he/she starts a washing program on a traditional machine and if he/she needs another laundry to wash urgently, he/she must stop the program, take off them out, put new laundry and start new program. Then he/she returns previous washing, the washing machine can not remember and memorize where the program was stopped so it starts to wash from the beginning. This causes energy time consumption and damages laundries

[0004] Prior art document US 5042276 A discloses a fully automatic washing machine comprising a washing/dehydration basket, an agitator rotatably disposed inside the washing/dehydration basket, a motor for rotating the washing/dehydration basket or the agitator, a detector for detecting the amount of wash corresponding to the washing load, a detector for detecting the level of water in the washing/dehydration basket, and a control circuit for controlling operations of washing and dehydration processes. Water-reserved-starting of the dehydration process is effected in such a manner that dehydration is started while leaving a certain quantity of water in the washing/dehydration basket. The amount of cloth is detected by the cloth amount detector before the start of the washing process or at an initial stage of the same, and a value thus detected is stored in the control circuit. Washing water is discharged while reading a signal from the water level detector before the start of the dehydration process, thereby leaving a certain quantity of water corresponding to the cloth amount value previously stored. However, the washing machine of this prior art fail to provide a mechanism for pausing and thereafter resuming a washing cycle.

[0005] Prior art document US 20070062224 A1 discloses controlling of the motor in washing machine while washing the clothes.

[0006] Prior art document EP 0381423 A1 discloses designing of washing machine including a single drum.

[0007] However, none of the prior art provide a mechanism for pausing and thereafter resuming a washing cycle.

Object of the Invention

[0008] It is therefore the object of the present invention a washing machine and a method for a mechanism for pausing and later on resuming a current wash cycle of clothes, from where the current wash cycle was paused.

Description of the Invention

[0009] The before mentioned object is solved by a washing machine of the Claim 1.

[0010] The washing machine includes a drum, a storing box, a control interface and a controller. The drum which recives clothes and rotates for washing the clothes.

The drum further includes a storing flap adapted to open or close for transferring clothes into the drum or out of the drum. The storing box cooperates with the drum to receive one or more clothes from the drum or to provide back the clothes to the drum on opening of the storing flap. The control interface receives a control input related to pausing a washing cycle of the clothes from an user. The controller performs following functions: receiving the control input from the control interface, enabling openingm of the storing flap based on the control input for allowing transfer of the clothes between the drum and the storing box, collecting one or more washing parameters at time of receiving the control input. The washing parameters includes atleast one of water level, temperature, time, detergent level, a washing cyle pre-program type, or combination thereof.

[0011] The above said washing machine provides for a functionality of pausing the washing machine and transferring the clothes to another storage box, so that the drum can be free for any alternate usage, like washing another laundry, cleaning the drum, etc. The collected washing parameters are helpful to re-program the washing machine again from the same point in the washing cycle was paused.

[0012] Further embodiments are subject-matter of dependent claims and/or of the following specification parts.

[0013] According to a preferred embodiment of the washing machine, the washing machine includes a memory for receiving the washing parameters from the controller, storing the washing parameters, and to retrieve the washing parameters on being queried.

[0014] This embodiment is beneficial as it helps to save the washing parameters for future usage, whenever, the same washing cycle has to be resumed.

[0015] According to a further embodiment of the washing machine, wherein the control input relates to pausing current washing cycle of a regular set of clothes, and starting a new washing cycle with a priority set of clothes.

[0016] This embodiment helps to provide the control input, not just for pausing a current washing cycle, but also to start another washing cycle, which has a priority at a particular point of time. It happens many times that suddenly a need arises for particular clothes to be washed on priority, and through this embodiment, the

user of the washing machine is not required to wait for finishing of a washing cycle of current laundry, rather he/she can just move ahead to provide the control input for stopping current wash cycle, and starting a new one at the same time.

[0017] According to a further embodiment of the washing machine, wherein on finishing of the new washing cycle and removing of the priority set of clothes, the controller further performs the following functions: enabling the storing flap to open for transferring the regular set of the clothes from the storage box to the drum, retrieving the washing parameters from the memory, programming the washing machine with the washing parameters for resuming the previous washing cycle.

[0018] This embodiment is beneficial, as it automize the procedure for resuming the paused washing cycle, by allowing the clothes of earlier washing cycle to be transferred into the drum, and further program the washing machine to resume the washing cycle from where it has left, when the washing cycle was paused.

[0019] According to another embodiment of the washing machine, wherein the storing box includes a removable cover adapted to open for allowing transfer of clothes between the drum and the storing box.

[0020] This embodiment is beneficial, as it provides the storing box which can be closed, and can be opened only when required, which helps the clothes to be unexposed and safeguarded within the washing machine while it is performing other functions.

[0021] According to a further embodiment of the washing machine, wherein the storing box is movable.

[0022] This embodiment is beneficial, as it allows the storing box to be in an appropriate position as desired for transferring the clothes, and further returning back to it's position.

[0023] According to another embodiment of the washing machine, wherein the storing box is rotatable around the drum.

[0024] This embodiment is beneficial, as it provides a simple way to move the storing box around the drum..

[0025] According to a further embodiment of the washing machine, wherein the clothes are adapted to be transferred into the drum or out of the drum due to gravitational force.

[0026] This embodiment is helpful, specifically in scenario where there is not automatic mechanism for the transfer of clothes by pushing the clothes in either the drum or the stroing box as desired, the gravitational force can be used to transfer the clothes from the storing box to the drum, and from the drum to the storing box.

[0027] The before mentioned object is also solved by a method of claim 9, which is used for providing a mechanism for pausing and resuming a current wash cycle of clothes in a washing machine, wherein the washing machine comprises a drum adapted to recive clothes and to rotate for washing the clothes. The method includes steps of: providing a storing flap in the drum, the storing flap is adapted to open or close for transferring clothes

into the drum or out of the drum, providing a storing box in proximity to the drum, so that the sroting box is adapted to cooperate with the drum to receive one or more clothes from the drum or to provide back the clothes to the drum on opening of the storing flap, providing a control interface adapted to receive a control input related to pausing a washing cycle of the clothes from an user, and providing a controller for controlling the washing machine, the controller is adapted to receive the control input from the control interface, to enable opening of the storing flap based on the control input for allowing transfer of the clothes between the drum and the storing box, to collect one or more washing parmeters at time of receiving the control input. The washing parameters comprises atleast one of water level, temperature, time, detergent level, a washing cyle pre-program type, or combination thereof.

[0028] Further embodiments are subject-matter of dependent claims and/or of the following specification parts.

[0029] According to a further preferred embodiment of the method, the method includes steps of: providing a memory for receiving the washing parameters from the controller, to store the washing parameters, and to retrieve the washing parameters on being queried.

[0030] According to another embodiment of the method, wherein the control input relates to pausing current washing cycle of a regular set of clothes, and starting a new washing cycle with a priority set of clothes. And, on finishing of the new washing cycle and removing of the priority set of clothes, the controller is further adapted: to enable the storing flap to open for transferring the regular set of the clothes from the storage box to the drum, to retrieve the washing parameters from the memory, and to program the washing machine with the washing parameters for resuming the previous washing cycle.

[0031] According to a further embodiment of the method, wherein the storing box is adapted to be rotated around the drum.

[0032] According to a further embodiment of the method, the method comprising step of displacing a washing liquid present in the drum of the washing machine out of the washing machine while transferring transferring clothes into the drum or out of the drum, wherein the washing liquid is used to wash the clothes present in the drum.

[0033] Further benefits, goals and features of the present invention will be described by the following specification of the attached figures, in which components of the invention are exemplarily illustrated. Components of the devices and method according to the inventions, which match at least essentially with respect to their function can be marked with the same reference sign, wherein such components do not have to be marked or described in all figures.

[0034] The invention is just exemplarily described with respect to the attached figure in the following.

Brief Description of the Drawings

[0035]

Fig. 1 shows schematically a washing machine according to the present invention.

Fig. 2 illustrates processing of the control input for further effectuating pausing and resuming of a wash cycle in the washing machine.

Detailed Description of the Drawings

[0036] Fig. 1 shows a washing machine 1 having a drum 2 with a storing flap 3, a storing box 4, and a control interface 5 for programming or controlling washing cycle of clothes inside the washing machine 1.

[0037] The control interface 5 includes an input mechanism to receive a user's input regarding programming the washing cycle or controlling the washing cycle.

[0038] Sometimes, a requirement arises that a current washing cycle has to be paused to carry out some other aspects with the washing machine 1, like washing another laundry urgently, or cleaning of the washing machine 1, or service the washing machine 1, etc. In such scenario, the user provides a control input through the control interface 5 using the input mechanism for pausing the washing machine.

[0039] The control input is received by a controller which controls washing cycle of the washing machine 1, and it pauses the washing machine 1. While stopping the washing cycle, the controller also records a set washing parameter related to the clothes, like water level at time of pausing the washing cycle, temperature of water or clothes at time of pausing the washing cycle, time left for washing cycle to complete, time incurred already in the washing cycle, detergent level while pausing washing cycle, a washing cycle pre-program type on which the washing cycle was running, etc. Further, the controller also enables the storing flap 3 of the washing machine 1 to open, so that the clothes of current washing cycle is transferred into the storing box 4. Once, the transfer of the clothes has happened, the storing flap 3 is closed, and the washing machine 1 is ready for any other use.

[0040] In an alternate embodiment, the storing box 4 has a removable cover which opens up to either receive the clothes or to provide the clothes to the drum 2. The removable cover helps to keep the clothes safe while not being operated by the washing machine 1.

[0041] To effectuate the transfer of the clothes from the drum 2 to the storing box 4, opening of the storing box 4 is aligned to the storing flap 3, so that the clothes directly transfers into the storing box 4, keeping away any possibilities of incomplete transfer of clothes.

[0042] The storing box 4 is shown to be placed below the drum 2, and is shown to be rotatable around the drum 2. However, in an alternate embodiment, the storing box 4 can be located at any other place within the washing

machine 1, and shall be moved into a position for being aligned with the storing flap 3 to receive the clothes from the drum 2.

[0043] In one embodiment, the clothes are adapted to be transferred into the drum 2 or out of the drum 2 with effect of the gravitational force. This embodiment is especially helpful, when there is no automatic mechanism for transferring the clothes into the drum 2 or out of the drum 2..

[0044] In one embodiment, the current washing cycle is paused through one control input and can be resumed through another control input. In another alternate embodiment, where the control input relates to pausing current washing cycle of a regular set of clothes, and starting a new washing cycle with a priority set of clothes, on finishing of the new washing cycle and removing of the priority set of clothes, the controller enables the storing flap 3 to open for transferring the regular set of the clothes from the storage box 4 to the drum 2, to retrieve the washing parameters from a memory, to program the washing machine 1 with the washing parameters 7 for resuming the previous washing cycle.

[0045] In one embodiment, while transferring transferring clothes into the drum 2 or out of the drum 2, a washing liquid present in the drum 2 of the washing machine 1 is displaced out of the washing machine 1. The washing liquid is used to wash the clothes present in the drum 2, and generally includes a detergent dissolved in water, or water alone.

[0046] Fig. 2 illustrates processing of the control input for effectuating pausing and resuming of a wash cycle in the washing machine.

[0047] The control interface 5 can be provided as part of the washing machine 1, or can be a remote control feature for controlling the washing machine 1 remotely. Once, the user provide the control input 6 through an input mechanism provided with the control interface 5, the control input 6 is provided to the controller 9 which controls the washing machine. On receiving the control input 6, the controller 9 enables opening of a storing flap of a drum of the washing machine 1 for allowing transfer of the clothes between the drum and the storing box, collects one or more washing parameters 7 at time of receiving the control input 6. Further, the washing parameters are stored in a memory 8, which can reside inside or outside the washing machine 1.

[0048] In an alternate embodiment, the control input 6 relates to pausing current washing cycle of a regular set of clothes, and starting a new washing cycle with a priority set of clothes. In such cases, on finishing of the new washing cycle and removing of the priority set of clothes, the controller 9 further enables the storing flap to open for transferring the regular set of the clothes from the storage box to the drum, retrieves the washing parameters 7 from the memory 8, and programs the washing machine 1 with the washing parameters 7 for resuming the previous washing cycle.

[0049] Thus, the present invention refers to a washing

machine, which can be used for all white goods, and is provided with a mechanism of pausing and resuming a washing cycle, comprising a drum 2 adapted to receive clothes and to rotate for washing the clothes, the drum 2 comprising a storing flap 3 adapted to open or close for transferring clothes into the drum 2 or out of the drum 2, a storing box 4 adapted to cooperate with the drum 3 to receive one or more clothes from the drum 2 or to provide back the clothes to the drum 2 on opening of the storing flap 3, a control interface 5 adapted to receive a control input 6 related to pausing a washing cycle of the clothes from an user, a controller 9 adapted to receive the control input 6 from the control interface 5, to enable opening of the storing flap 4 based on the control input 6 for allowing transfer of the clothes between the drum 2 and the storing box 4, to collect one or more washing parameters 7 at time of receiving the control input 6, wherein the washing parameters 7 comprises at least one of water level, temperature, time, detergent level, a washing cycle pre-program type, or combination thereof.

List of reference numbers

[0050]

- 1 Washing Machine
- 2 drum
- 3 storing flap
- 4 storing box
- 5 control interface
- 6 control input
- 7 washing parameters
- 8 memory
- 9 controller

Claims

1. A washing machine (1) comprising:

a drum (2) adapted to receive clothes and to rotate for washing the clothes, the drum (2) comprising a storing flap (3) adapted to open or close for transferring clothes into the drum (2) or out of the drum (2),
 a storing box (4) adapted to cooperate with the drum (3) to receive one or more clothes from the drum (2) or to provide back the clothes to the drum (2) on opening of the storing flap (3),
 a control interface (5) adapted to receive a control input (6) related to pausing a washing cycle of the clothes from an user,
 a controller (9) adapted

to receive the control input (6) from the control interface (5),
 to enable opening of the storing flap (4) based on the control input (6) for allowing

transfer of the clothes between the drum (2) and the storing box (4),
 to collect one or more washing parameters (7) at time of receiving the control input (6), wherein the washing parameters (7) comprises at least one of water level, temperature, time, detergent level, a washing cycle pre-program type, or combination thereof.

2. The washing machine (1) according to the claim 1 comprising:

a memory (8) adapted to receive the washing parameters (7) from the controller (9), to store the washing parameters (7), and to retrieve the washing parameters (7) on being queried.

3. The washing machine (1) according to any of the claims 1 or 2,

characterized in that,

the control input (6) relates to pausing current washing cycle of a regular set of clothes, and starting a new washing cycle with a priority set of clothes.

4. The washing machine (1) according to the claim 3, **characterized in that,** on finishing of the new washing cycle and removing of the priority set of clothes, the controller (9) is further adapted:

to enable the storing flap (3) to open for transferring the regular set of the clothes from the storage box (4) to the drum (2),
 to retrieve the washing parameters (7) from the memory (8),
 to program the washing machine (1) with the washing parameters (7) for resuming the previous washing cycle.

5. The washing machine (1) according to any of the claims 1 to 4,

characterized in that

the storing box (4) comprises a removable cover adapted to open for allowing transfer of clothes between the drum (2) and the storing box (4).

6. The washing machine (1) according to any of the claims 1 to 5,

characterized in that

the storing box (4) is movable.

7. The washing machine according to any of the claims 1 to 6,

characterized in that

the storing box (4) is rotatable around the drum (2).

8. The washing machine (1) according to the claim 7, wherein

the clothes are adapted to be transferred into the drum (2) or out of the drum (2) due to gravitational force.

9. A method for providing a mechanism for pausing and resuming a current wash cycle of clothes in a washing machine (1), wherein the washing machine (1) comprises a drum (2) adapted to receive clothes and to rotate for washing the clothes, the method comprising:

providing a storing flap (3) in the drum (2), the storing flap (3) is adapted to open or close for transferring clothes into the drum (2) or out of the drum (2),
 providing a storing box (4) in proximity to the drum (2), so that the storing box (4) is adapted to cooperate with the drum (2) to receive one or more clothes from the drum (2) or to provide back the clothes to the drum (2) on opening of the storing flap (3),
 providing a control interface (5) adapted to receive a control input (6) related to pausing a washing cycle of the clothes from an user,
 providing a controller (9) for controlling the washing machine (1), the controller is adapted:

to receive the control input (6) from the control interface (5),
 to enable opening of the storing flap (3) based on the control input (6) for allowing transfer of the clothes between the drum (2) and the storing box (4),
 to collect one or more washing parameters (7) at time of receiving the control input (6), wherein the washing parameters (7) comprises at least one of water level, temperature, time, detergent level, a washing cycle pre-program type, or combination thereof.

10. The method according to the claim 9 comprising:

providing a memory (8) for receiving the washing parameters (7) from the controller (9), to store the washing parameters (7), and to retrieve the washing parameters (7) on being queried.

11. The method according to any to any of the claims 9 or 10,
 characterized in that
 the control input (6) relates to pausing current washing cycle of a regular set of clothes, and starting a new washing cycle with a priority set of clothes.
 on finishing of the new washing cycle and removing of the priority set of clothes, the controller (9) is further adapted:

to enable the storing flap (3) to open for transferring the regular set of the clothes from the

storage box (4) to the drum (2),
 to retrieve the washing parameters (6) from the memory (8),
 to program the washing machine (1) with the washing parameters (7) for resuming the previous washing cycle.

12. The method according to any of the claims 9 to 11, **characterized in that**
 the storing box (4) is adapted to be rotated around the drum (2).

13. The method according to any of the claims 9 to 13 comprising:

displacing a washing liquid present in the drum (2) of the washing machine (1) out of the washing machine (1) while transferring clothes into the drum (2) or out of the drum (2), wherein the washing liquid is used to wash the clothes present in the drum (2).

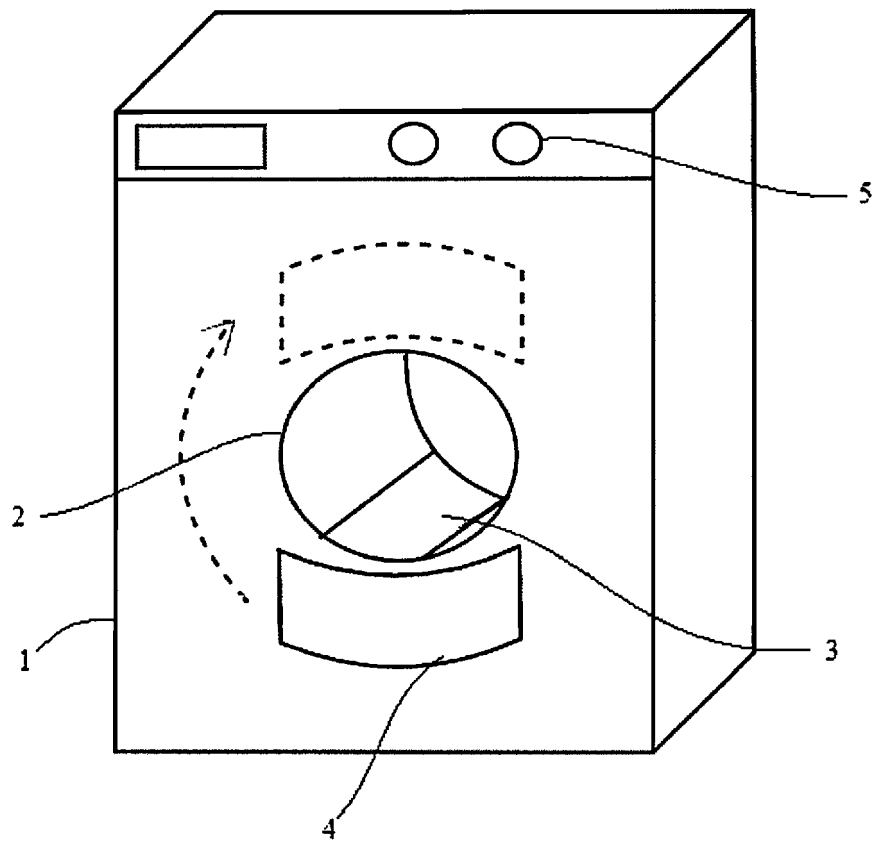


Fig.1

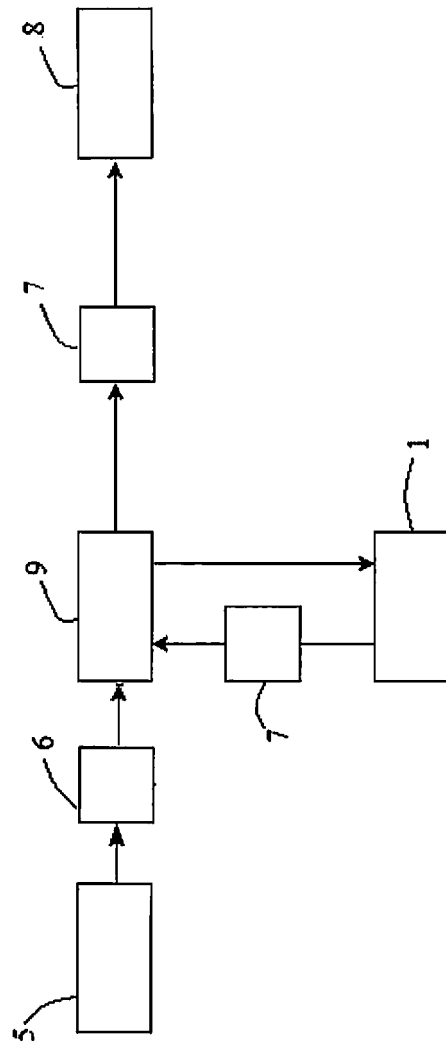


Fig. 2



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Application Number
EP 17 17 3078

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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