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(54) **Washing machine with a spray mechanism**

(57) The invention relates to a washing machine comprising a laundry loading opening having a sealing element 10 provided with at least one nozzle 30 and a

water supply line 20 which supplies a water taken into said machine to said nozzle 30. Said at least one nozzle 30 comprises a perforated element 31 for ejecting the water out off the nozzle 30 in a sprinkling manner.

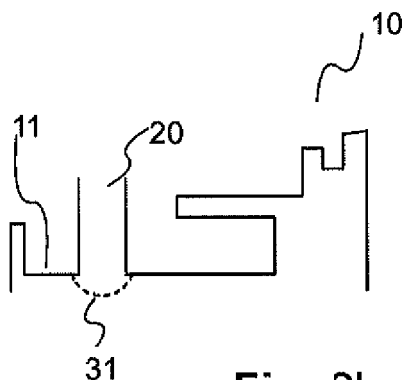


Fig. 2b

Description

[0001] The present invention relates to a washing machine and particularly to such washing machine comprising a laundry loading opening having a sealing element provided with at least one nozzle and a water supply line which supplies water taken into said machine to said nozzle.

[0002] As known, a water supply system in a washing machine is used for taking water into a tub containing laundry to be washed and draining off water from the tub. The operation manner and details of such systems are known in the relevant technical field. In a particular embodiment of such system, an additional water supply line is provided on a loading opening of the washing machine for letting the user see the water taken into the machine or for direct insertion of such water into a rotatable drum for tumbling the laundry during washing and disposed in the tub.

[0003] In a water supply line according to the prior art, as illustrated in Figure 1 of the drawing attached hereto, a water supply aperture (C) is provided at an upper part of the washer's (A) sealing element (B), and water in the water reservoir (D) is supplied to said aperture (C) through a water supply channel (E). Thus, a user viewing the machine from the exterior sees the water as it flows downwards from the upper part of the opening and understands that the machine is taking in water. This feature further provides the opportunity of cleaning the glass of the loading opening, providing the user with a better view through the glass.

[0004] Furthermore, other embodiments have been produced according to prior art for using said water supply line with the purpose of enhancing the washing efficiency. According to DE 43 30 079 C2, water arriving at the front opening's sealing element is made to flow in a sprinkling manner over the laundry in the machine, by means of a nozzle formed on the sealing element and extending by a certain angle upwards toward the drum.

[0005] In all embodiments referred to hereinabove, the element whereby water is outlet from the nozzle has a relatively large aperture, thus shaping the water into a single jet structure and limiting the distribution of the water over the laundry in the tub.

[0006] The present invention relates to a novel water supply line, eliminating aforesaid problems and brining new advantages to the relevant technical field. The main objective of the present invention is to produce a water supply line which would provide an improved distribution of water the laundry within the machine, to result in a more efficient washing of laundry within the machine.

[0007] According to the objectives referred to hereinabove and to emerge in the detailed description, the present invention provides a washing machine as specified in the independent claim. Preferred embodiments of the invention are specified in dependent claims.

[0008] According to the invention, a washing machine comprising a laundry loading opening having a sealing

element provided with at least one nozzle and a water supply line which supplies water taken into said machine to said nozzle, and wherein said at least one nozzle comprises a perforated element for ejecting the water out off the nozzle in a sprinkling manner.

[0009] Thereby, the invention provides to scatter the water in the form of fine particles over the laundry, and thus produces a showering effect to occur which ascertains a thorough and even distribution of the water over the laundry within the machine.

[0010] A preferred embodiment of the present invention comprises at least one nozzle formed at the upper part of said sealing element.

[0011] Another preferred embodiment of the present invention comprises two mutually adjacent nozzles at the upper part of said sealing element, and a communication channel providing communication between said two nozzles. In a further preferred embodiment, said communication channel forms a fork extension in the continuation of the supply line and comprises two separate further lines extending to the nozzles. In yet a further preferred embodiment, at least one of said nozzle comprises a threaded part.

[0012] The present invention, can similarly be applied to any household or industrial machine (e.g. dishwasher) comprising a sealing element having a water supply line on itself.

[0013] The protection scope of the present invention is set forth in the annexed Claims and is not to be restricted to the illustrative disclosure given below under the detailed description of the drawing. Any person skilled in the relevant art will be able to produce similar embodiments under the light of the present disclosure, without departing from the principles of the present invention as defined in the annexed Claims.

[0014] Structural and characteristic features and all advantages of the present invention shall be made clear by means of the following detailed description of preferred embodiments shown in the annexed drawing. The subject novelty is described illustratively by means of examples as illustrated in the annexed figures, which serve only to make clear the present invention without imposing any restrictions thereon. In the drawing,

Figure 1 is an illustrative embodiment according to the prior art;

Figure 2a is an illustrative view of a washing machine having a supply line;

Figures 2b, 2c, and 2d provide illustrative views of the water supply line according to embodiments of the present invention;

Figure 3 is an illustrative view of an alternative embodiment of the water supply line according to the present invention.

[0015] Figure 1 having been described hereinabove; reference is now made to Fig. 2a. Fig. 2a shows a washing machine having a water supply line. Further, a sealing element 10 is provided at the inlet of the drum of the washing machine. Then, a supply line 20 is provided on the upper part of the sealing element 10. A nozzle 30 is provided at the end of the supply line 20 facing the drum, said nozzle providing water to the drum. A perforated element 31 is provided at said nozzle 30.

[0016] Figure 2b illustrates the cross-section of the sealing element 10. As can be seen from this figure as well, the supply line 20 and the nozzle 30 are preferably provided at the rear section 11 of the sealing element. As can be see from Figure 2c as well, the nozzle 30 is not embodied in an open form, but in the form of a perforated element 31.

[0017] The supply line 20 and further lines 21 provided on the sealing element 10 have an upside down "Y" like shape, as illustrated in Figure 3. Thanks to this form, the further lines 21 are separated into two branches by a certain angle. One perforated element 31 is provided at said nozzle 30 of said further lines 21.

[0018] According to the structural details given above, the operation of the system is as follows. While water is supplied into the drum of the washing machine, it is fed through perforated element 31, which is disposed at the nozzle 30 and provided with a plurality of openings thereon. Thus, water is supplied in a sprinkling manner, just like the showers used in bathrooms. Therefore, the washing and rinsing performances are enhanced by providing an easier supply of washing liquid to the laundry.

[0019] In an alternative embodiment, the supply line 20 is branched into at least two further lines 21. Thanks to these further lines, the sprinkling effect is increased by providing larger amount of washing liquid to the laundry in a relatively shorter period of time.

List of Reference Numerals

[0020]

- 10 Sealing element
- 11 Rear section
- 20 Supply line
- 21 Further line
- 30 Nozzle
- 31 Perforated element

Claims

1. A washing machine comprising a laundry loading opening having a sealing element (10) provided with at least one nozzle (30) and a water supply line (20) which supplies water taken into said machine to said nozzle (30), **characterized in that** said at least one nozzle (30) comprises a perforated element (31) for ejecting the water out off the nozzle (30) in a sprin-

klung manner.

2. The washing machine according to Claim 1, **characterized in that** said at least one nozzle (30) comprises two mutually adjacent nozzles (30) at an upper part of the sealing element (10), and a communication channel providing communication between said two nozzles (30).
3. The washing machine according to Claim 2, **characterized in that** said communication channel forms a fork extension in the form of the continuation of said supply line (20) and comprises two separate further lines (21) extending to the nozzles (30).
4. The washing machine according to one of the preceding claims, **characterized in that** said at least one nozzle (30) comprises a threaded part.
5. The washing machine according to one the preceding claims, **characterized in that** said supply line (20) and said at least one nozzle (30) are embodied on a rear section (11) of said sealing element (10).

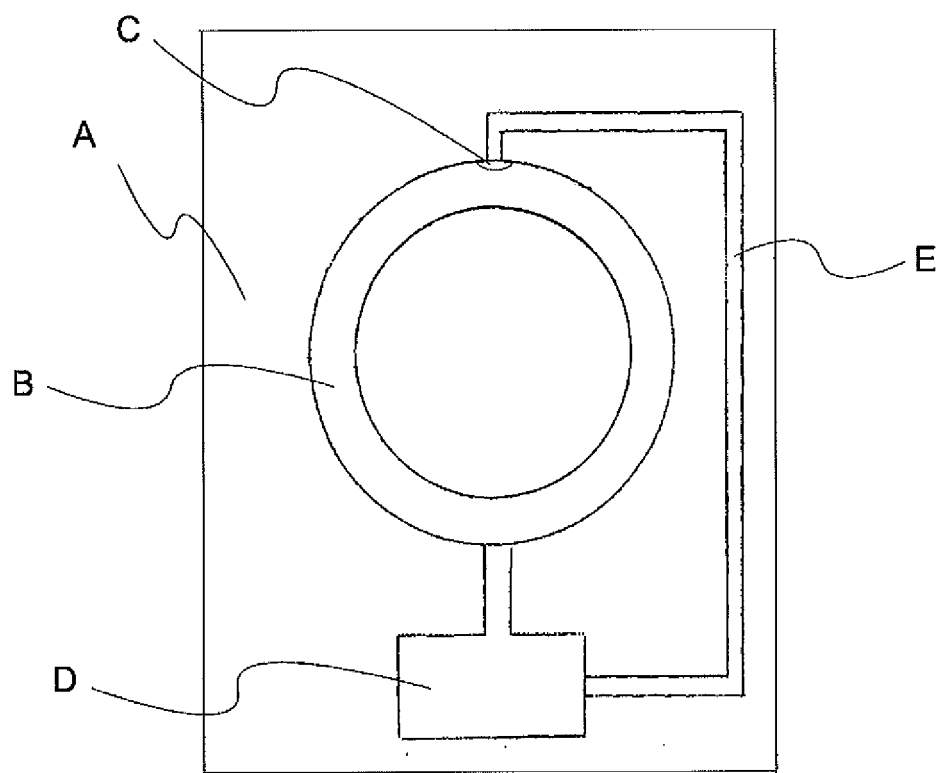


Fig. 1

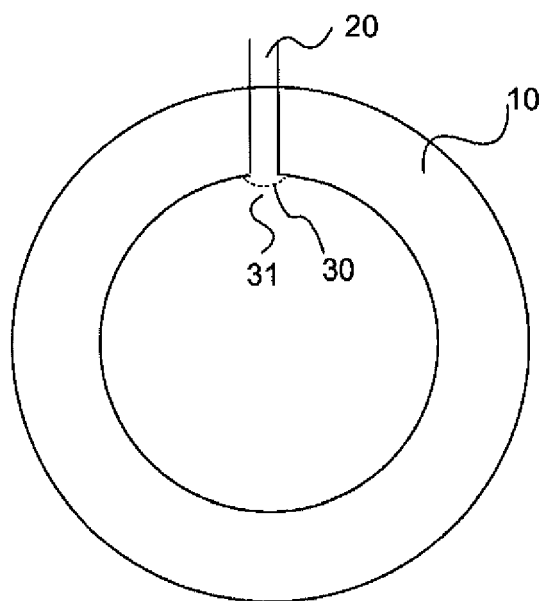


Fig. 2a

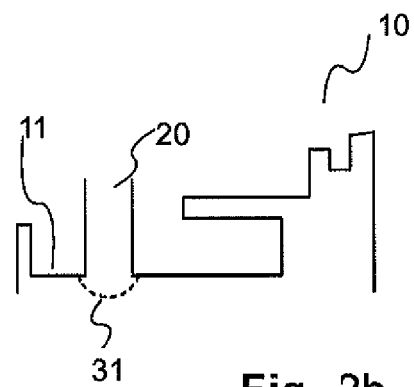


Fig. 2b

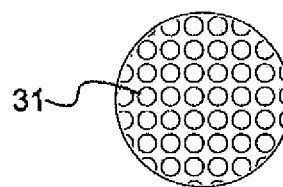


Fig. 2c

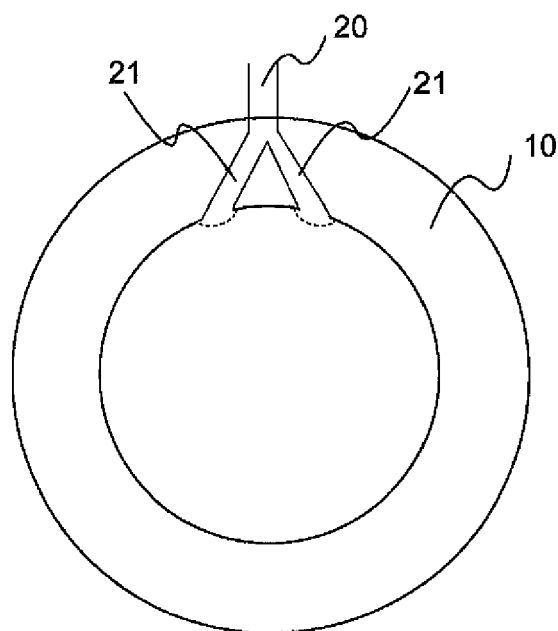


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 09 16 6250

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 12 October 2009	Examiner Dupuis, Jean-Luc
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 16 6250

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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12-10-2009

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