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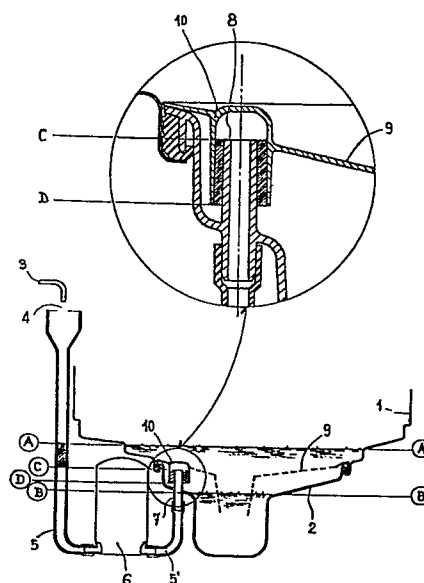
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54 **Washing machine provided with a device for preventing backflow of water.**

57 Preventing device for backflow of contaminated water in washing machines for domestic use characterized in that outlet opening (8) of the supply nozzle (7) is located at a level (C) below the static water level (A), the end portion of said supply nozzle extending into an inverted cup-shaped element (10) the opening of which is located at a level (D) above the dynamic water level (B), the interior wall surface of said cup-shaped element and the exterior surface of said supply nozzle end portion defining a space the volume of which is at least equal to the interior volume of said supply tube (5) between said static water level (A) and the level (C) of said outlet opening.



Description

This invention relates to the water supply circuit of a washing machine for domestic use. In the particular case of dishwashing machines, it is generally known that such machines are normally provided with a device for decalcifying tap water, and with a water supply circuit including a supply pressure relief means communicating with the atmosphere and entering the washing tub of the machine preferably adjacent the bottom thereof. Interiorly of said tub, the water supply circuit comprises a water supply nozzle extending in an upward direction beyond the highest water level within the tub under static conditions, i.e. with the water circulation pump inoperative. This is absolutely necessary for preventing backflow of the contaminated washing water into the water supply circuit with the resulting contamination particularly of the resin charge of the decalcifier device.

The water supply nozzle may be surmounted by a deflector for preventing the decalcified water from contacting corrosion-prone portions of the tub, and is normally integral with the water collecting well of the machine, from which it extends upwards to a level as indicated above. During storage, transport and mounting of the collecting well, the supply nozzle is easily damaged, as it is a rather fragile element usually made of plastics.

An object of the present invention is the provision of a washing machine of the above defined type, in which the water supply nozzle, while being integral with the bottom of the tub or rigidly affixed thereto, does not project thereabove, while still being capable of preventing any undesired backflow of contaminated water into the water supply circuit.

In order to attain the abobe object, the invention provides a washing machine comprising a water collecting well sealingly penetrated by a water supply nozzle extending in an upward direction and connected to a decalcifier device supplied with water via a tube having supply pressure relief means communicating with the atmosphere at a level above the static water level within the water tub, said tube extending to a point below the dynamic water level within said tub. In accordance with the invention, a washing machine of the above type is characterized in that the outlet opening of said supply nozzle is located at a level below the static water level, the end portion of said supply nozzle extedning into an inverted cup-shaped element the opening of which is located at a level above the dynamic water level. the interior wall surface of said cup-shaped element and the exterior surface of said supply nozzle end portion defining a space the volume of which is at least equal to the interior volume of said supply tube between said static water level and the level of said outlet opening.

The novel features and advantages of the invention will become more evident from the following description of an illustrative embodiment, taken in conjunction with the accompanying drawings, the single figure of which shows a diagrammatic cross-sectional view of the principal elements of the water supply circuit of a washing machine according to the invention.

With reference to the drawing, the washing machine according to the invention is preferably a dishwashing machine having a washing tub 1 to the bottom of which a water collecting well 2 is attached in a sealing manner. Water is supplied to the machine in a per se known manner from a tap 3 via a supply pressure relief device 4

communicating with the atmosphere and forming part of a water supply circuit exterior of the washing tub 1. The supply circuit further includes a supply conduit 5, 5' and a decalcifier device 6 inserted therein. The conduit portion or tube 5 extends to a point above the static water level A within tub 1, i.e. the water level attained with the circulation pump (not shown) inoperative, and to a point below the dynamic water level B attained during operation of the circulation pump. The downstream end of conduit portion 5' is connected to a water supply nozzle 7 sealingly penetrating the wall of collecting well 2 and preferably formed integral therewith of a plastics material. Within well 2, nozzle 7 extends in an upward direction, with its upper outlet opening 8 being located at a level C below the above defined static level A, and preferably below a mechanical filter 9 provided in the machine. The upper end portion of nozzle 7 projects into an inverted cup-shaped element 10 preferably formed integral with mechanical filter 9, the opening of which is located at a level D above the above defined dynamic water level B within tub 1.

The supply nozzle 7 and the inverted cup-shaped element 10 are dimensioned such that the interior wall surface of element 10 and the exterior surface of the end portion of supply nozzle 7 together define an annular space (depicted in the drawing by the cross-hatched area between levels C and D) the volume of which is at least equal to the volume (also indicated by cross-hatching) of supply tube 5 between the static water level A and the level C of the outlet opening, taking into account the albeit minimal volume variation due to the compressibility of air.

In operation, tub 1 of the machine is initially filled with tap water via conduit 5, 5' and decalcifier 6 up

to the static water level A. Due to the law of communicating conduits, this level is also attained in supply tube 5 communicating with the atmosphere via supply pressure relief device 4. Operation of the circulating pump subsequently causes the water level in collecting well 2 to drop to the dynamic level B, resulting in a limited amount of water to flow from supply nozzle 7 until the water in supply tube 5 has dropped to the level C of outlet opening 8. After the circulating pump terminates its operation, the water contained in the spray conduits flows back into well 2, whereby tub 1 is again filled up to the static level A. During this phase, the rising water in tub 1 entraps a certain volume of air between the inverted cup-shaped element 10 and the supply nozzle 7, and subsequently forces the entrapped air into supply nozzle 7, so that the water in supply tube 5 again rises to the static level A, due to the effect of communicating conduits. As indicated above, this air volume is calculated such that the water within cup-shaped element 10 does not rise above the level C. This prevents the contaminated washing water from flowing back into the supply circuit, which would otherwise result in undesirable contamination of the supply circuit, and particularly of the resin charge of the decalcifier 6. From the above description it is thus evident that the washing machine according to the invention comprises a supply nozzle 7 which may be formed integrally with the collecting well 2 while not projecting thereabove, thus avoiding any functional deficiencies as indicated in the introduction.

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EP 142

Improvements in or relating to washing
machines, particularly dishwashing machines

P a t e n t C l a i m s

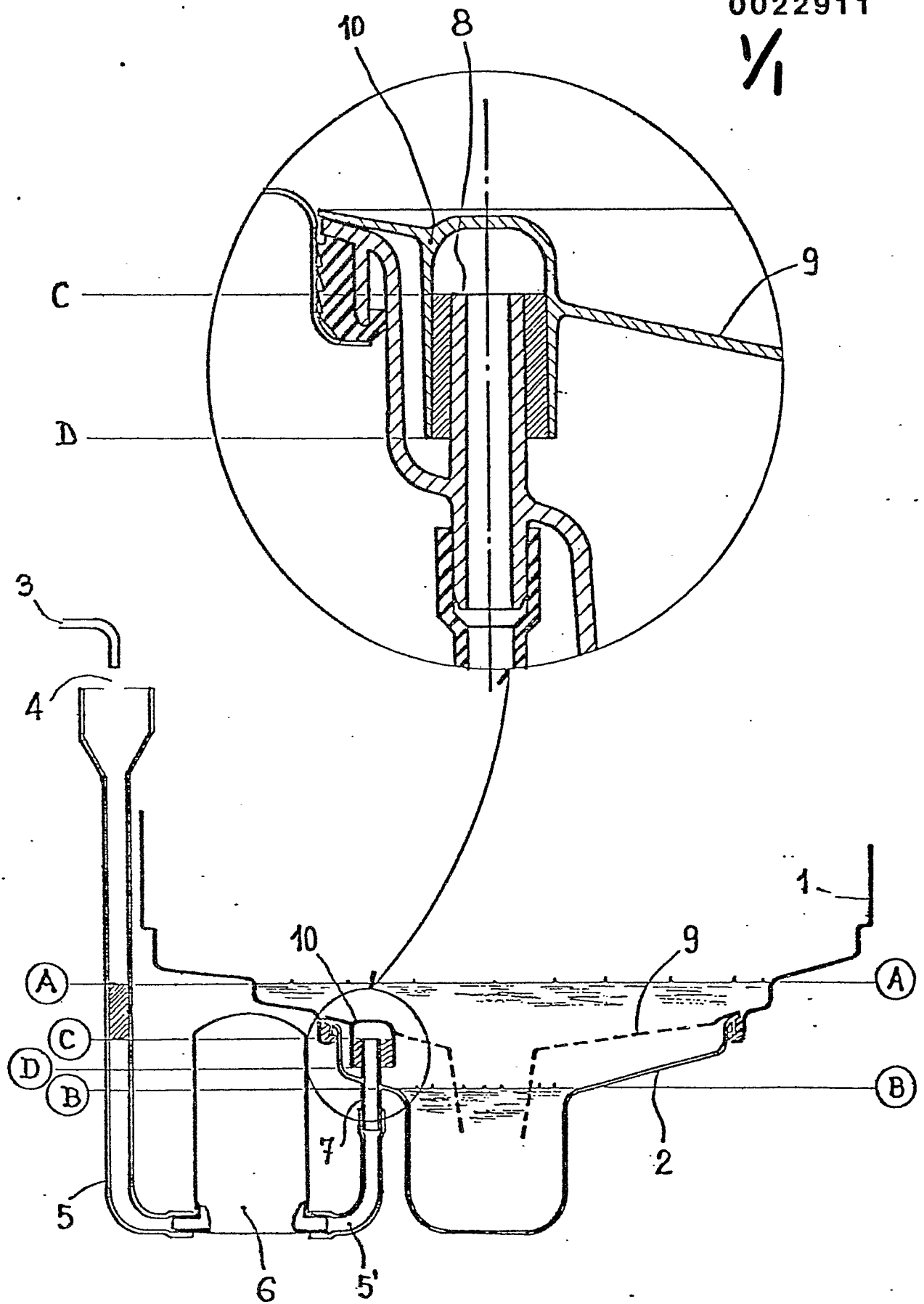
1. A washing machine comprising a water collecting well sealingly penetrated by a water supply nozzle extending in an upward direction and connected to a

decalcifier device supplied with water via a tube having supply pressure relief means communicating with the atmosphere at a level above the static water level within the water tub, said tube extending to a point below the dynamic water level within said tub, characterized in that the outlet opening (8) of said supply nozzle (7) is located at a level (C) below the static water level (A), the end portion of said supply nozzle extending into an inverted cup-shaped element (10) the opening of which is located at a level (D) above the dynamic water level (B), the interior wall surface of said cup-shaped element and the exterior surface of said supply nozzle end portion defining a space the volume of which is at least equal to the interior volume of said supply tube (5) between said static water level (A) and the level (C) of said outlet opening.

2. A washing machine according to claim 1, characterized in that said inverted cup-shaped element (10) is formed integrally with a mechanical filter (9) provided in said machine in a per se known manner.

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European Patent
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EUROPEAN SEARCH REPORT

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Application number

EP 80 10 2829.1

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. CL)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>GB - A - 1 011 877</u> (GENERAL ELECTRIC) * fig. 2 *	1	A 47 L 15/42 D 06 F 39/08
	-- <u>GB - A - 1 387 085</u> (BAUKNECHT) * claim 2 *	2	
	-- <u>DE - B2 - 1 628 681</u> (LICENTIA)		
A	-- <u>DE - A1 - 2 439 400</u> (EUROPE MANUFACTURING TRUST)		TECHNICAL FIELDS SEARCHED (Int. CL)
A	-- <u>DE - A1 - 2 710 364</u> (EURO HAUSGERÄTE)		A 47 L 15/42 D 06 F 39/08

			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family. corresponding document
X	The present search report has been drawn up for all claims		
Place of search Berlin		Date of completion of the search 20-08-1980	Examiner KLITSCH