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(54) **Water supply device**

Wasserversorgungsvorrichtung

Dispositif d'alimentation en eau

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Description

[0001] The present invention relates to a water supply device, commonly called an "air break" in the technical parlance, for domestic washing appliances, such as dishwashers and washing machines.

[0002] A device of this type typically comprises a flattened hollow body of plastic material, which is connected to other components of the domestic appliance and is shaped in such a way that it can perform various functions, by providing, for example, a vent for vapour formed in the washing chamber, an air gap for the water supply, a collector of water for use in forming regeneration brine for ion exchange resins of the water softener, and the like.

[0003] There is a known way of producing a device of this type in three different parts which are manufactured separately by injection moulding and are then welded together to provide the various required functions. However, the assembly of this number of parts makes the production process complex and expensive.

[0004] DE-24 17 732 discloses an air gap device for a domestic washing appliance, which is depicted as monolithic and has nozzles whose end has an hemi-spherical shape.

[0005] GB-2 155 316 discloses an hydraulic feeder having a steam outlet for dishwashers.

[0006] The object of the present invention is therefore to overcome the aforementioned drawbacks of the known art.

[0007] According to the invention, this object is achieved by means of a water supply device having the features indicated in Claim 1 below. Preferred features of this device are indicated in the dependent claims numbered 2 to 7.

[0008] The construction of the device according to the invention in only two parts yields a corresponding simplification of the production process: in particular, all the components of the air gap device are formed in one piece, thus automatically preventing possible malfunctions caused by incorrect mutual positioning.

[0009] In particular, it should be noted that, according to the present invention, the respective tubular tapered mutually facing ends of the first and second half-conduit are produced integrally with the body of the distributor device (or alternatively with its cover), thus yielding a considerable advantage over the case in which these ends are formed by the assembly of a cover on to a body, as illustrated in DE-A-29 08 824: this is because positioning errors due to the assembly of different pieces, which could compromise the correct operation of the air gap device, are automatically avoided.

[0010] It should also be noted that the phrase indicating that the first and second half-conduits have "respective mutually facing ends" means that the aforesaid ends are substantially aligned, in other words arranged on the same straight line, so that one half-conduit forms a kind of linear prolongation of the other. This arrangement has the advantage of not requiring the presence of deflector

elements or the like which would guide the flow of water from one half-conduit to the other, and therefore enables the operation of the air gap device to be optimized.

[0011] A further object of the present invention is a domestic washing appliance comprising a supply device of the aforementioned type.

[0012] Other advantages and characteristics of the present invention will become clear from the following detailed description which is given by way of non-limiting example with reference to the attached drawings, in which:

Figure 1 is a perspective view of a device according to the invention,

Figure 2 is an exploded perspective view of the device of Figure 1,

Figure 3 is a plan view of the device of the preceding figures, and

Figure 4 is a plan view of one of the two component parts of the device of the preceding figures.

[0013] A water supply device for a domestic washing appliance is formed (Figures 1 - 4) by only two parts, namely a body 10 and a cover 12, which are advantageously produced from plastic material by injection moulding.

[0014] The body 10 has a bottom wall 14, from the side edge of which a transverse wall 16 rises, and which has a substantially rectangular shape, the central part of one of the short sides having a semicircular protrusion 18.

[0015] The cover 12 has a shape corresponding to that of the bottom wall 14, and is fixed, in particular by welding, to the upper edge of the transverse wall 16. A circular hole 20, half of which extends into the semicircular protrusion 18, and which is surrounded by a wall 22 protruding from the face opposite to the body 10, is also formed in the cover 12. The bottom wall 14 is pierced by a further through hole 24 which is intended to communicate with the outside and which defines the maximum level which can be reached by the water in the washing chamber of the domestic appliance.

[0016] A cavity 26 is formed between the walls 14, 16 of the body 10 and the cover 12, and contains an air gap device formed by a first and a second half-conduit 28, 30 which taper at their respective ends which are tubular, namely with a closed cross section, face each other, and are made integrally with the bottom wall 14.

[0017] The facing ends of the two half-conduits 28, 30 are substantially aligned, namely are arranged along the same straight line, so that one half-conduit forms a kind of linear prolongation of the other.

[0018] The first half-conduit 28 also constitutes the extension of a supply conduit 32, formed by facing side walls 34 which protrude from the bottom wall 14 and are closed at their free edges by the cover 12. The supply conduit 32 has a U-shaped layout and comprises an entry portion 36 protruding outside the transverse wall 16 at one side of the semicircular protrusion 18.

[0019] For its part, the second half-conduit 30 comprises, at its end opposite to its tapered end, a terminal portion 38 protruding outside the transverse wall 16, at the opposite side of the semicircular protrusion 18.

[0020] In use, the supply device is mounted on the domestic appliance in such a way as to ensure that the cover 12 and the bottom wall 14 are positioned in respective vertical planes, and that the internal cavity 26 acts as a vent for the vapour generated in the washing chamber. This assembly also causes the tubular facing ends of the two half-conduits 28, 30 to be arranged along the same vertically orientated straight line, and causes the flow of water from one to the other to follow a straight path without the need for additional guide elements.

[0021] Naturally, the principle of the invention remaining the same, the details of construction and the forms of embodiment may be varied widely with respect to those described, which have been given purely by way of example, without thereby departing from the scope of the invention as defined in the attached claims. In particular, the half-conduits forming the air gap device could be made integrally with the cover, instead of with the bottom wall of the body. Similarly, the facing side walls forming the supply conduit could protrude from the cover and be closed on their free edges by the bottom wall of the body.

Claims

1. Water supply device for a domestic washing appliance, formed by a body (10) having a bottom wall (14) from the side edge of which a transverse wall (16) rises, and by a cover (12) which has a shape corresponding to that of said bottom wall (14) and is fixed to the upper edge of said transverse wall (16), a cavity (26) being formed between the walls of the body (10) and the cover (12), either said bottom wall (14) or said cover (12) incorporating a first and a second half-conduit (28, 30) tapering at respective ends facing each other, so that they form an air gap device, said first half-conduit (28) constituting the extension of a supply conduit (32) formed by facing side walls (34) which protrude from the bottom wall (14) and are closed by said cover (12), or alternatively protrude from the cover (12) and are closed by said bottom wall (14), said device being **characterised in that** the tubular facing ends of the first and second half-conduits (28, 30) are arranged along the same straight line.
2. Device according to claim 1, wherein said cover (12) is fixed by welding to the upper edge of said transverse wall (16).
3. Device according to any of the previous claims, wherein said supply conduit (32) has a U-shaped layout and comprises an entry portion (36) protruding outside said transverse wall (16).

4. Device according to any of the previous claims, wherein said second half-conduit (30) comprises, at its end opposite to its tapered end, a terminal portion (38) protruding outside said transverse wall (16).
5. Device according to any of the previous claims, wherein said bottom wall (14) and said cover (12) have a substantially rectangular shape, the central part of one of the short sides having a semicircular protrusion (18).
6. Device according to any of the previous claims, wherein a circular hole (20), which also extends into said semicircular protrusion (18) and is surrounded by a wall (22) protruding from the face of the cover (12) opposite to the body (10), is formed in said cover (12).
7. Device according to any of the previous claims, wherein said bottom wall (14) is pierced by a further through hole (24).
8. Domestic washing appliance comprising a water supply device according to any of the preceding claims.
9. Domestic appliance according to Claim 8, comprising a water supply device wherein the cover (12) and the bottom wall (14) are positioned in respective vertical planes.
10. Domestic appliance according to Claim 8 or 9, wherein the tubular facing ends of the first and second half-conduits (28, 30) are arranged along the same straight line which is orientated vertically.

Patentansprüche

1. Wasserversorgungsvorrichtung für ein häusliches Waschgerät, die durch einen Körper (10) mit einer Bodenwand (14), von deren Seitenrand eine Seitenwand (16) aufragt, sowie durch einen Deckel (12) gebildet ist, der eine der Bodenwand (14) entsprechende Form hat und an dem oberen Rand der Seitenwand (16) befestigt ist, wobei eine Vertiefung (26) zwischen den Wänden des Körpers (10) und dem Deckel (12) ausgebildet ist, wobei entweder die Bodenwand (14) oder der Deckel (12) eine erste und zweite Leitungshälfte (28, 30) enthält, die sich an jeweils einander gegenüberliegenden Enden verjüngen, so dass sie eine Luftspaltvorrichtung bilden, wobei die erste Leitungshälfte (28) die Verlängerung einer Versorgungsleitung (32) darstellt, die durch gegenüberliegende Seitenwände (34) gebildet ist, welche aus der Bodenwand (14) vorstehen und durch den Deckel (12) verschlossen sind, oder alternativ aus dem Deckel (12) vorstehen und durch die Bo-

- denwand (14) verschlossen sind, wobei die Vorrichtung **dadurch gekennzeichnet ist, dass** die röhrenförmigen gegenüberliegenden Enden der ersten und zweiten Leitungshälfte (28, 30) entlang derselben geraden Linie angeordnet sind. 5
2. Vorrichtung nach Anspruch 1, wobei der Deckel (12) mit dem oberen Rand der Seitenwand (16) durch Schweißen verbunden ist. 10
3. Vorrichtung nach einem der vorstehenden Ansprüche, wobei die Versorgungsleitung (32) U-förmig gestaltet ist und einen von der Seitenwand (16) auswärts vorstehenden Zugangsabschnitt (36) hat. 15
4. Vorrichtung nach einem der vorstehenden Ansprüche, wobei die zweite Leitungshälfte (30) an ihrem vom sich verjüngenden Ende abgewandten Ende einen von der Seitenwand (16) auswärts vorstehenden Anschlussabschnitt (38) hat. 20
5. Vorrichtung nach einem der vorstehenden Ansprüche, wobei die Bodenwand (14) und der Deckel (12) eine im Wesentlichen rechteckige Form haben, wobei der Mittelabschnitt einer der kurzen Seiten einen halbkreisförmigen Vorsprung (18) hat. 25
6. Vorrichtung nach einem der vorstehenden Ansprüche, wobei ein kreisförmiges Loch (20) in dem Deckel (12) ausgebildet ist, das sich auch in den halbkreisförmigen Vorsprung (18) erstreckt und durch eine Wand (22) umschlossen ist, die aus der dem Körper (10) entgegengesetzten Seite des Deckels (12) vorsteht. 30
7. Vorrichtung nach einem der vorstehenden Ansprüche, wobei die Bodenwand (14) durch ein weiteres Durchgangsloch (24) durchbrochen ist. 35
8. Häusliches Waschgerät mit einer Wasserversorgungsvorrichtung nach einem der vorstehenden Ansprüche. 40
9. Häusliches Waschgerät nach Anspruch 8 mit einer Wasserversorgungsvorrichtung, wobei der Deckel (12) und die Bodenwand (14) in entsprechenden senkrechten Ebenen angeordnet sind. 45
10. Häusliches Waschgerät nach Anspruch 8 oder 9, wobei die röhrenförmigen gegenüberliegenden Enden der ersten und zweiten Leitungshälfte (28, 30) entlang derselben senkrecht ausgerichteten geraden Linie angeordnet sind. 50
- lavage domestique, formé par un corps (10) comportant une paroi inférieure (14) depuis le bord latéral duquel une paroi transversale (16) s'élève, et par un couvercle (12) qui a une forme correspondant à celle de ladite paroi inférieure (14) et est fixé sur le bord supérieur de ladite paroi transversale (16), une cavité (26) étant formée entre les parois du corps (10) et le couvercle (12), soit ladite paroi inférieure (14) ou ledit couvercle (12) incorporant un premier et un second demi-conduit (28, 30) conique en des extrémités respectives se faisant face, de telle manière qu'ils forment un dispositif d'espace d'air, ledit premier demi-conduit (28) constituant l'extension d'un conduit d'alimentation (32) formé par des parois latérales (34) se faisant face qui font saillie depuis la paroi inférieure (14) et sont fermées par ledit couvercle (12), ou en variante font saillie depuis le couvercle (12) et sont fermées par ladite paroi inférieure (14), ledit dispositif étant **caractérisé en ce que** les extrémités se faisant face tubulaires des premier et second demi-conduit (28, 30) sont agencées suivant la même ligne droite.
2. Dispositif selon la revendication 1, dans lequel ledit couvercle (12) est fixé par soudure sur le bord supérieur de ladite paroi transversale (16).
3. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ledit conduit d'alimentation (32) a une disposition en forme de U et comprend une partie d'entrée (36) faisant saillie à l'extérieur de ladite paroi transversale (16).
4. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ledit second demi-conduit (30) comprend, au niveau de son extrémité opposée à son extrémité conique, une partie terminale (38) faisant saillie à l'extérieur de ladite paroi transversale (16).
5. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ladite paroi inférieure (14) et ledit couvercle (12) ont une forme sensiblement rectangulaire, la partie centrale de l'un des côtés courts comportant une saillie demi-circulaire (18).
6. Dispositif selon l'une quelconque des revendications précédentes, dans lequel un trou circulaire (20), qui s'étend aussi dans ladite saillie demi-circulaire (18) et est entouré par une paroi (22) faisant saillie depuis la face du couvercle (12) opposée au corps (10), est formé dans ledit couvercle (12).
7. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ladite paroi inférieure (14) est percée par un autre trou de passage (24).
8. Appareil de lavage domestique comprenant un dis-

Revendications

1. Dispositif d'alimentation en eau pour un appareil de

positif d'alimentation en eau selon l'une quelconque des revendications précédentes.

9. Appareil domestique selon la revendication 8, comprenant un dispositif d'alimentation en eau dans lequel le couvercle (12) et la paroi inférieure (14) sont positionnés dans des plans verticaux respectifs. 5
10. Appareil domestique selon la revendication 8 ou 9, dans lequel les extrémités se faisant face tubulaires des premier et second demi-conduit (28, 30) sont agencées le long de la même ligne droite qui est orientée verticalement. 10

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Fig.1

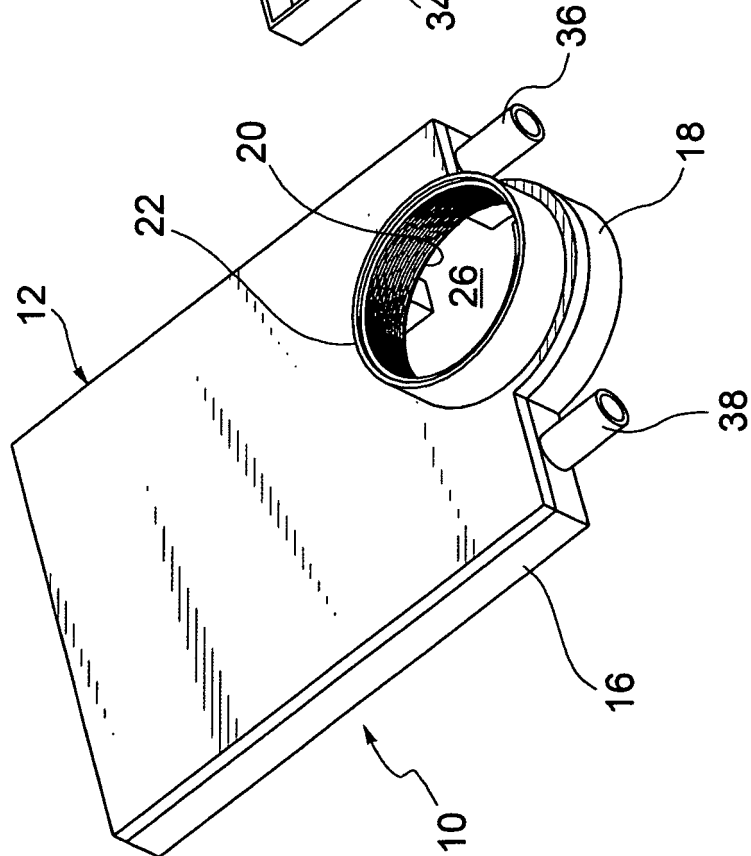
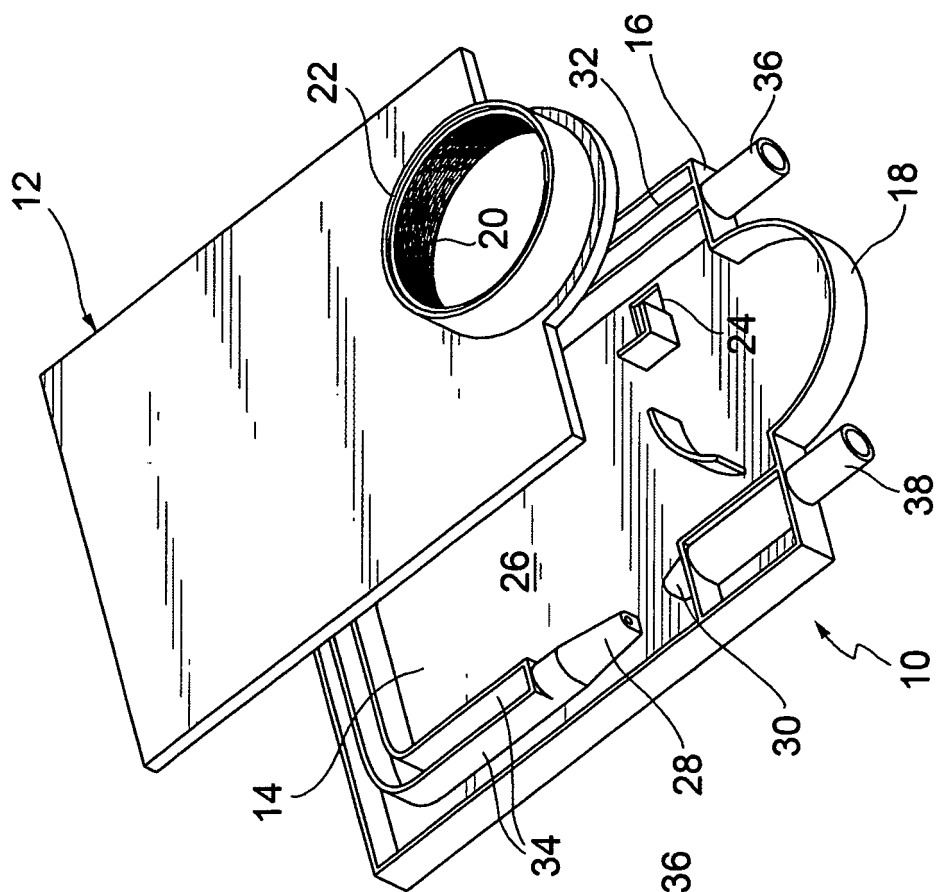
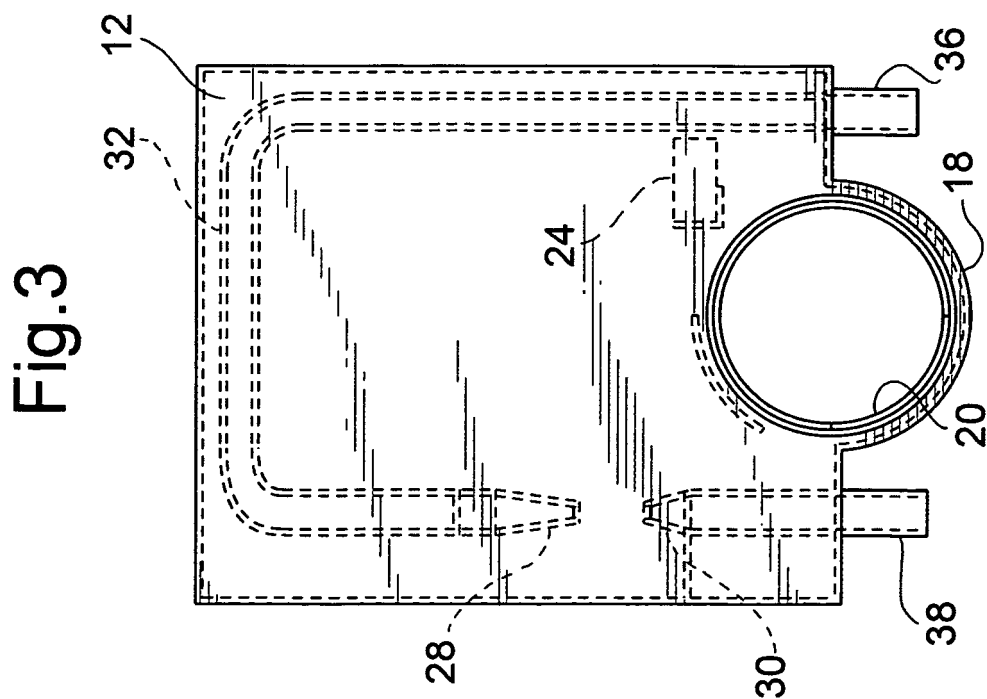
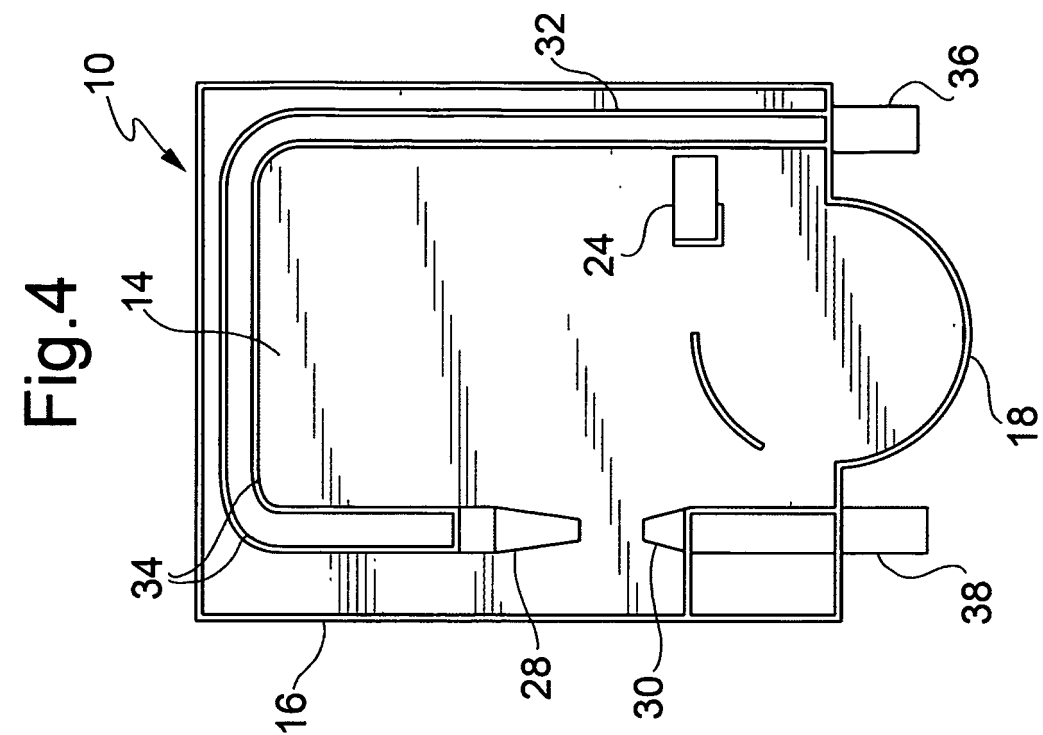


Fig.2





REFERENCES CITED IN THE DESCRIPTION

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