STEAMING DEVICE COMPONENT WITH REDUCED CONDENSATION

FIELD OF THE INVENTION

The present invention relates to a steaming device component. The present invention also relates to a steaming device, such as a garment steamer or a steam cleaning device.

BACKGROUND OF THE INVENTION

Garment steamers are used to remove creases from fabric, such as clothing and bedding. Garment steamers comprise a main body, or steamer base, having a water reservoir and a steam generator, a steamer head, which is held by a user, and a hose, which connects the steamer base to the steamer head.

Water is fed from the water reservoir in the steamer base into the steam generator in which it is converted to steam. Steam is then transported to the steamer head through the hose. Steam exits the steamer head and is used to heat up and momentarily moisten the fabric in an attempt to obtain effective removal of creases from the fabric to be treated.

In garment steamers, as described above, the steamer base is capable of generating steam at a high rate. However, it is known that not all the steam generated by the steamer base exits the steamer head. The generated steam condenses to form water on its journey from the steam base to an exit of the steamer head. This can reduce the performance of the garment steamer by up to 10%.

Condensed steam in a steam passageway can cause water to drip out of the steamer head onto the user's hands or onto the garment to be treated. Furthermore, the water in the steam passageways may be ejected from the steamer head, also known as 'spitting'. This may cause wet spots on the garment to be treated and reduces the effectiveness of the garment steamer. Furthermore, water may collate in the steam passageway and block, or partially block, the steam passageway.

WO 2005/118944 discloses a steam generator comprising a sprial-shaped groove that is heated by a resistive heat element. Water is poured onto the spiral-shaped groove and is heated by the resistive heat element to produce steam. The spiral-shaped

groove comprises a steam promoting means to increase the rate of evaporation of water into steam in the spiral-shaped groove.

DE19606519 discloses a steam iron having a steam chamber with a bottom coated with a hydrophile layer of a water glass-like compound.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a steaming device component and/or a steaming device which substantially alleviates or overcomes the problems mentioned above.

The invention is defined by the independent claims; the dependent claims define advantageous embodiments.

According to the present invention, there is provided a steaming device component comprising a passageway having an inner surface along which steam may flow, at least a section of the inner surface being formed by a foam material having a ~~low~~ thermal conductivity of less than 1 W/mK such that the foam material reduces the rate of condensation on the inner surface, and wherein the at least a section of the inner surface being formed by the foam material is non-porous.

The foam material requires less heat energy to attain the same temperature as the steam. Therefore, the foam material heats up quickly reducing the time in which condensation can take place on the inner surface of the steam passageway. In addition, ~~The at least a section of the inner surface being formed by the foam material may be non-porous. A~~as the steam cannot pass the inner surface of the foam material, steam passing through the passageway is prevented from being absorbed by the foam material. Yet further, the low thermal conductivity of the foam material allows the foam material to retain the heat energy transferred to it by the steam, reducing the subsequent energy transferred to it and reducing the condensation rate.

The foam material may be non-porous. Steam cannot enter the foam material which reduces the contact surface area of the foam material. Therefore, the steam loses less heat energy heating up the foam material, which helps to reduce the rate of condensation. The foam material being non-porous aids ease of manufacture of the foam material. Furthermore, the effect of any imperfections on the inner surface of the foam material is minimized.

The foam material may be flexible. The flexibility of the foam material allows it to bend without being damaged. This allows the foam material to be used in components of the steaming device such as a hose.

The passageway may be tubular. The tubular passageway directs the steam in the correct direction. The tubular steam passageway helps to ensure an even heat distribution along the inner surface. This prevents local condensation points occurring.

The inner surface of the passageway may be formed by the foam material. The surfaces along the passageway are formed by the foam material which reduces the rate of condensation at any point in the passageway. This helps to prevent localized condensation spots.

The passageway may comprise at least an outer layer and an inner layer, the foam material forming the inner layer. The materials that form the outer and inner layers can be chosen to provide the steaming device component with a strong, durable structure and the best possible performance in terms of reducing the rate of condensation and increasing the steam rate.

The inner layer may be a coating. The amount of foam material needed for the construction of the steaming device component can be reduced. Steaming device components that have already been manufactured can be updated with the coating of foam material on the inner layer.

The foam material may form the passageway. The rate of condensation along the length of the passageway can be reduced.

The density of the foam material may be less than 400 g/L. The foam material with a density of less than 400 g/L is low enough to make a significant difference to the reduction of the condensation rate.

The density of the foam material is greater than 20 g/L. The very low density foam materials provide the best performance and add the least weight to the steaming device component. Dripping and spitting during use could be avoided altogether.

The steaming device component may comprise a steamer head and/or a steam hose having the passageway through which steam flows. The hose attachment provides maneuverability and transports steam from one location to another. The steamer head allows the steam to be directed onto the fabric to be treated without burning the user.

The steaming device component may further comprise a suction section. The suction section allows steam and air to be sucked away from the fabric during steam treatment.

~~The thermal conductivity of the foam material may be less than 1 W/mK. The low thermal conductivity of the foam material allows the foam material to retain the heat~~

~~energy transferred to it by the steam, reducing the subsequent energy transferred to it and reducing the condensation rate.~~

The foam material may comprise a polymer. The polymer can be chosen that has a low density and low thermal conductivity. Polymers can be easily expanded to further lower the density of the material. Examples of polymers that may be used as the foam material include, but are not limited to, polypropylene and polystyrene.

According to another aspect of the present invention, there is provided a steaming device comprising steaming device component according to any one of claims 1 to 14.

These and other aspects of the invention will be apparent from and elucidated with reference to the embodiments described hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Fig. 1 shows a schematic view of a garment steamer.

Fig. 2 shows a schematic cross-sectional view of a part of the garment steamer.

Fig. 3 shows a schematic view of an alternative embodiment of a part for the garment steamer with a suction section.

Fig. 4 shows a schematic cross-sectional view of the part of Fig. 3.

DETAILED DESCRIPTION OF EMBODIMENTS

Referring to Fig.1, there is shown a garment steamer 1 as one example of a steaming device in which the invention may be applied. The garment steamer 1 is configured to produce steam which is used to heat up and momentarily moisten a fabric (not shown) in an attempt to obtain the removal of creases from the fabric. Fabrics to be treated include, but are not limited to, clothing and bedding.

The garment steamer 1 comprises a steamer base 2 and a steamer head 7. The steamer base 2 comprises a water reservoir (not shown) and a steam generator (not shown). The water reservoir stores water which is fed into the steam generator to be converted to steam. It will be understood that the water reservoir and steam generator may be integral.

The steamer base 2 further comprises a steamer base outlet 3. The steamer base outlet 3 is configured to allow steam to exit the steamer base 2. The steamer base outlet

3 is disposed at an upper end of the steamer base 2. This helps to maximize the flow of steam generated by the steam generator from the steamer base 2.

In the embodiment where the water reservoir and steam generator are integral, the high position of the steamer base outlet 3 helps to minimize contact time between the steam and water. This helps to prevent steam contacting cooler water in the steam generator and condensing.

A steam hose 4 communicates between the steamer base 2 and steamer head 7. That is, the steam is able to flow along the steam hose 4 from the steamer base 2 to the steamer head 7. The steam hose 4 forms a part of the garment steamer 1. The steam hose 4 is a hollow tube. The steam hose 4 is flexible. The steam hose 4 comprises a steam hose inlet 5. The steam hose inlet 5 allows steam to enter the steam hose 4 from the steamer base 2. The steam hose inlet 5 is configured to be attached to the steamer base outlet 3. The steam hose 4 further comprises a steam hose outlet 6. The steam hose outlet 6 allows steam to exit the steam hose 4.

The steam hose inlet 5 and the steam hose outlet 6 are at opposing ends of the steam hose 4. The tubular steam hose 4 allows steam to pass from the steam hose inlet 5 to the steam hose outlet 6. The steam hose 4 is also flexible. This allows the steamer head 7 to be moved and orientated relative to the steamer base 2. Therefore, the flexible steam hose 4 allows the user to vary the position in which the garment steamer 1 is used without moving the steamer base 2.

The steamer head 7 has a body 8. The steamer head 7 forms a part of the garment steamer 1. The steamer head 7 comprises a handle portion 9. The handle portion 9 is configured to allow a user to hold the steamer head 7. The steamer head 7 further comprises a steamer plate 10, acting as a steaming face. The steamer plate 10 is configured to be positioned against the fabric to be treated. The handle portion 9 and the steamer plate 10 are at opposing ends of the steamer head 7.

The steamer head 7 further comprises a steamer head inlet 11. The steamer head inlet 11 is proximate the handle portion 9 of the steamer head 7. The steamer head inlet 11 is configured to allow steam to enter the steamer head 7 from the steam hose 4. The steamer head inlet 11 is configured to be attached to the steam hose outlet 6.

The steamer head 7 further comprises a steamer head outlet 12. The steamer head outlet 12 is located in the steamer plate 10. The steamer head outlet 12 is configured to be disposed against, or proximate to, a fabric to be treated. The steamer head outlet 12 allows

steam to exit the steamer head 7. The steamer head 7 is configured to allow steam to pass from the steamer head inlet 11 to the steamer head outlet 12.

It will be understood that in one embodiment of the garment steamer 1, the steam hose 4 is integrally formed with the steamer base 2 and the steamer head 7 is a part of the garment steamer 1. In an alternative embodiment, the steam hose 4 is not integrally formed with the steamer base 2 and the steam hose 4 is a part of the garment steamer 1 itself. In a further embodiment, the steamer base 2, steamer head 7, and steam hose 4 are integral and together form a part of the garment steamer 1. The steam hose 4 and/or steamer head 7 may be attachments.

Referring now to Fig. 2, there is shown a schematic cross-sectional side view of part of the steam hose 4 and the steamer head 7 shown in Fig. 1. The body of the steamer head 7 has a head outer layer 13 and a head inner layer 14. The head outer layer 13 and head inner layer 14 are attached to each other. The head outer layer 13 and head inner layer 14 form a laminate.

The head outer layer 13 of the steamer head 7 forms the handle portion 9 and the steamer plate 10. The head outer layer 13 is rigid. The handle portion 9 allows the user to hold the steamer head 7 and maneuver it easily.

The steamer head inlet 11 is formed by a recess 15 in the steamer head 7. The recess 15 comprises an attachment arrangement (not shown), configured to receive the steam hose 4. The steam hose 4 also has an attachment arrangement (not shown), configured to attach the steam hose 4 to the steamer head 7 using the attachment arrangement in the recess 15. It will be understood that any appropriate attachment arrangement may be used.

The steamer head inlet 11 is fluidly connected to the steam hose outlet 6 which is located in the recess 15. The steamer head inlet 11 is fluidly connected to the steamer head outlet 12 by a steam funnel 16. The steam funnel 16 acts as a steam passageway. The steam funnel 16 is configured to transport steam from the steamer head inlet 11 to the steamer head outlet 12.

The steam funnel 16 is defined by a head inner surface 17 of the head inner layer 14 along which steam flows. The head inner surface 17 of the steam funnel 16 is formed by cylindrical cavity which extends throughout the head inner layer 14 of the steamer head 7 from the recess 15 to the steamer plate 10. In an alternative embodiment, the head inner surface 17 of the steam funnel 16 may be defined by the head outer layer 13, in the absence of the head inner layer 14.

The steam funnel 16 has a circular cross-section that extends from the steamer head inlet 11 to the steamer plate 10. The circular cross-section of the steam funnel 16 helps to ensure a uniform heat transfer from the steam to the head inner layer 14. The circular cross-section also promotes a more uniform flow through the steam passageway. However, it will be understood that the cross-section of the steam funnel 16 may have an alternative configuration, for example, but not limited to, elliptical, square or triangular.

The cross-sectional area of the steam funnel 16 increases towards the steamer head outlet 12 in the steamer plate 10. The head inner surface 17 which defines the cylindrical steam funnel 16 diverges towards the steamer plate 10. However, in an alternative embodiment, the cross-sectional area of the steam funnel 16 may remain constant or decrease towards the steamer plate 10.

In the present embodiment, the steam funnel 16 is also arcuate. That is, the centers of the circular cross-sections forming the steam funnel 16 are not concentric about the same axis; the line through the center of the steam funnel 16 is arcuate. However, the steam funnel 16 may have an alternative arrangement, for example, but not limited to, linear, wherein the centers of the circular cross-sections are concentric about the same axis; the line through the center of the steam funnel 16 is linear.

The steamer plate 10 comprises the steamer head outlet 12. The steamer head outlet 12 is a steam vent 18 in the steamer plate 10. The steam vents 18 form apertures in the steam plate 10. The steam vent 18 extends parallel to the flow of steam through the steam funnel 16 proximate the steamer head outlet 12. The steamer plate 10 extends at an obtuse angle, close to perpendicular, to the steam vent 18. However, in an alternative embodiment, the steam plate 10 and steam vents may have a different configuration.

In the present embodiment, steam vents 18 are formed in the steam plate 10. The steam vents 18 are configured to allow the steam to exit the steamer head 7. The steam vents 18 extend through the steamer plate 10 and into the steam funnel 16. This helps to prevent condensed steam exiting, or being ‘spat’ out of, the steam vents 18. The steam vents 18 are tubular.

In the present embodiment, the steam vents 18 are formed by the head outer layer 13. The head outer layer 13 is coated by the head inner layer 14. Alternatively, the head inner layer 14 may form the steam vents 18. In the present embodiment, the steam vents 18 have a circular cross-section. However, the steam vents 18 may have an alternative configuration, for example, but not limited to, square or triangular.

In the embodiment shown in Fig. 2, the head inner layer 14 of the steamer head 7 comprises a foam material 19. The foam material 19 which forms the head inner layer 14 of the steam funnel 16 reduces the rate of condensation on the head inner surface 17. The foam material 19 is flexible.

The foam material 19 has a low density which reduces the rate of condensation because it allows the foam material 19 to attain/reach the same temperature as the steam whilst absorbing less of the steam's heat energy. The minimal temperature difference between the steam and the foam material 19 reduces the rate of condensation.

The foam material 19 also has a low thermal conductivity which reduces the rate of condensation because it allows the foam material 19 to retain the heat energy transferred to it by the steam. By retaining the heat transferred to it from the steam, the foam material 19 reduces the subsequent heat transfer to it from the steam, allowing the steam to retain its heat energy and reducing the likelihood of condensation forming in the steam passageway.

The foam material 19 comprises a steam contact surface 20. The head inner surface 17 of the steam funnel 16 is the steam contact surface 20. Therefore, the head inner surface 17 of the steam passageway is formed by the foam material 19.

In the present embodiment, the head inner layer 14 is a coating of foam material 19 on the inner surface of the head outer layer 13. The foam material 19 that forms the head inner layer 14 is used to coat any surface of the head outer layer 13 that would come into contact with the steam if the foam material 19 was not present. Therefore, the foam material 19 forms the head inner surface 17 of the whole steam passageway.

In the present embodiment, the foam material 19 forms the head inner layer 14 that coats the steam passageway formed by the inner surface of the head outer layer 13. However, the body 8 of the steamer head 7 may have alternative embodiments. For example, instead of being a coating on the inner surface of the head outer layer 13, the foam material 19 may form part of the head outer layer 13. Alternatively, the steamer head 7 may be formed from a single layer formed by the head inner layer 14, so that the steamer head 7 is formed from one layer of foam material 19.

In an alternative embodiment, the body 8 of the steamer head 7 may be formed by the head outer layer 13 and the head inner layer 14. However, in this alternative embodiment, the head inner layer 14 is not a coating on the head outer layer 13. The foam material 19, which forms the head inner layer 14, may be used make components formed by the head outer layer 13. The components made from the foam material 19, which forms the

head inner layer 14, may be used to replace the outer layer components around the steam passageway.

Although in the embodiments described above the foam material 19 coats the inner surface of the head outer layer 13 to form the head inner layer 14 along the steam passageways so that the steam only contacts the steam contact surface 20 of the foam material 19, it will be understood that the foam material 19 may have alternative embodiments. For example, the foam material 19 may substantially cover the head outer layer 13. Therefore, at least a section of the head inner surface 17 of the steam passageway is formed by the foam material 19 and a section of the head inner surface 17 of the steam passageway is formed by the head outer layer 13.

Fig. 2 also shows the steam hose 4. The steam hose 4 is attached to the steamer head 7 by an attachment arrangement (not shown) in the recess 15. The steam hose outlet 6 and the steamer head inlet 11 coincide. The steam hose 4 comprises a hose outer layer 21 and a hose inner layer 22. The hose outer layer 21 and hose inner layer 22 of the steam hose 4 form a laminate.

The steam hose 4 defines a passage 23 along which steam flows. The passage 23 acts as a steam passageway.

The passage 23 is defined by a hose inner surface 24 of the hose inner layer 22 along which steam flows. The hose inner surface 24 of the passage 23 is formed by a cylindrical cavity which extends from the steam hose inlet 5 to the steam hose outlet 6. In an alternative embodiment, the hose inner surface 24 of the steam hose 4 may be defined by the hose outer layer 21, in the absence of the hose inner layer 22.

The hose inner layer 22 of the steam hose 4 is formed by the foam material 19. The foam material 19 which forms the hose inner layer 22 of the passage 23 is configured to minimize the rate of condensation on the hose inner surface 24. The foam material 19 comprises a steam contact surface 20. The hose inner surface 24 of the passage 23 is the steam contact surface 20. Therefore, the hose inner surface 24 of the steam passageway is formed by the foam material 19. The foam material 19 is flexible which allows it to bend and/or twist without being damaged.

In the present embodiment, the foam material 19 forms the hose inner layer 22 that coats the steam passageway formed by the inner surface of the hose outer layer 21. However, the steam hose 4 may have alternative embodiments. For example, instead of being a coating on the inner surface of the hose outer layer 21, the foam material 19 may form part of the hose outer layer 21. Alternatively, the steam hose 4 may be formed from a single layer

formed by the hose inner layer 22, so that the steam hose 4 is formed from one layer of foam material 19.

The foam material 19 is configured to minimize the rate of condensation that forms on the steam contact surface 20 of the steam passageway. The foam material 19 has a low density. The low density of the foam material 19 reduces the energy required to raise the temperature of the foam material 19 to the same temperature as the steam. The temperature of the foam material 19 is increased by the heat energy transferred to it from the steam. Condensation stops once the temperature of the foam material 19 has reached the temperature of the steam.

The foam material 19 heats up quickly because less energy is required to raise the temperature of the foam material 19 and so reduces the amount of time in which condensation can occur on the steam contact surface 20 of the steam passageways. This is particularly useful when the garment steamer 1 is first turned on and the largest difference between the temperature of the steam and the steam contact surface 20 of the steam hose 4 and/or steamer head 7 of the garment steamer 1 exists. The temperature difference is quickly reduced which significantly reduces the rate at which condensation occurs. By reducing the condensation rate of the garment steamer 1, the steam rate and the efficiency of the garment steamer 1 is increased.

The density of the foam material 19 may be greater than 20 g/L. The density of the foam material 19 may be less than 400 g/L. The lower the density of the foam material 19, the less energy is required to raise the temperature of the foam material 19 to the same temperature as the steam. Therefore, there is less time for condensation to occur. Furthermore, as the foam material 19 heats up quickly, the steam is in contact with a higher temperature surface and so less condensation occurs on the steam contact surface 20.

In one embodiment, the density of the foam material 19 is greater than or equal to 80 g/L. An advantage to the foam material 19 having a density greater than or equal to 80 g/L is that the stability during use is increased and shrinkage of the foam material 19 due to long periods of exposure to steam is minimized. The density of the foam material 19 may be less than or equal to 200 g/L. The foam material 19 having a density less than or equal to 200 g/L eases manufacturing.

The foam material 19 has a low thermal conductivity. The low thermal conductivity of the foam material 19 helps to reduce the rate at which heat transfers from the steam to the steamer head 7. The foam material 19 heats up using less energy and then retains the heat transferred to it by the steam. This enables the foam material 19 to maintain a

temperature close to the steam which in turn reduces the heat which is transferred from the steam to the foam material 19 as time passes. This helps to keep the rate of condensation to a minimum. The thermal conductivity of the foam material 19 may be less than 1 W/mK.

The foam material 19 has high heat resistance. The high heat resistance of the foam material 19 enables it to remain dimensionally stable when subjected to heat cycles, i.e. being switched on and subjected to heat and then being switched off and cooling down. The high heat resistance of the foam material 19 helps to prevent it from warping or degrading. This ensures that the steam flow through the steam passageways is not disturbed and improves durability.

The foam material 19 is non-porous. This prevents steam passing through the foam material 19. This helps to ensure that the steam flow through the steam passageway is not turbulent because the steam cannot enter the foam material 19. Furthermore, the non-porous foam material 19 reduces the surface area that the steam can come in contact with. This helps to reduce the amount of heat transferred to the foam material 19. The more heat is transferred to the surface of the foam material, the less heat is left in the steam making the steam more likely to condense. Furthermore, damage to the steam contact surface 20 of the foam material 19 will not cause the foam material 19 to become ineffective at reducing the rate of condensation.

In the present embodiment, the foam material 19 is uniform. That is, the foam material is non-porous throughout and has the same density, the same thermal conductivity, and the same heat resistance. However, it will be understood that the foam material may have alternative embodiments. For example, in an alternative embodiment, only the steam contact surface 20, forming the head inner surface 17 of the steam passageway, may be non-porous. Steam cannot pass through the steam contact surface 20 because it is non-porous so the rest of the foam material 19 does not need to be non-porous. In another embodiment, the density, thermal conductivity, and heat resistance may vary as the distance from the steam contact surface 20 of the steam passageway increases.

The foam material 19 is a polymer. The foam material 19 is formed from an expanded polypropylene, however alternative suitable materials may be used, for example, polystyrene.

Referring now to Fig. 3, an alternative embodiment of the steamer head 25 is shown. The steam vents 18 extend through the steamer plate 10 and into the steam funnel 16. The steam vents 18 are configured to allow steam to exit the steamer head 25. The steamer

head 25 is generally the same as the steamer head 7 described above and so a detailed description will be omitted herein.

The steamer head 25 further comprises a suction section 26. The suction section 26 is located on the underside of the steamer head 25. The suction section 26 is integrally formed with the body of the steamer head 25. The suction section 26 is located below the steam funnel 16.

The suction section 26 comprises a suction inlet 27 and a suction outlet 28. The suction inlet 27 comprises suction inlet vents 29 in the steamer plate 10. The suction inlet vents 29 are formed by horizontal slits. The suction outlet 28 comprises suction outlet vents 30 in a side wall of the body of the steamer head 25. The suction outlet vents 30 are formed by horizontal slits. However, it will be understood that the suction vents 29, 30 may have alternative arrangements, for example, but not limited to, circular or square.

Fig. 4 shows a schematic cross-sectional side view of part of the steam hose 4 and the steamer head 25 with the suction section 26 shown in Fig. 3. The suction section 26 of the steamer head 25 has a suction section outer layer 31 and a suction section inner layer 32. The suction section outer layer 31 and suction section inner layer 32 form a laminate.

The suction inlet 27 of the suction section 26 is fluidly connected with the suction outlet 28 by a suction duct 33. The suction duct 33 forms the steam passageway. A suction section inner surface 34 of the suction duct 33 is formed by a foam material 35. The suction duct 33 has a suction fan 36 located along its length. The suction duct 33 transports a mixture of steam and air away from the fabric once the steam has been used to treat the fabric.

In the embodiment shown in Fig. 4, the suction section inner layer 32 of the suction section 26 comprises the foam material 35. The foam material 35 which forms the suction section inner layer 32 of the suction duct 33 reduces the rate of condensation on the suction section inner surface 34. The foam material 35 is generally the same as the foam material 19 described in the previous embodiment and so a detailed description will be omitted herein.

The foam material 35 comprises a steam contact surface 37. The suction section inner surface 34 of the suction duct 33 is the steam contact surface 37. Therefore, the suction section inner surface 34 of the suction passageway is formed by the foam material 35.

In the present embodiment, the suction section inner layer 32 is a coating of foam material 35 on the inner surface of the suction section outer layer 31. The foam material 35 that forms the suction section inner layer 32 is used to coat any surface of the suction

section outer layer 31 that would come into contact with the steam if the foam material 35 was not present. Therefore, the foam material 35 forms the suction section inner surface 34 of the entire suction passageway.

The suction fan 36 rotates to create a pressure difference. The pressure difference draws steam that has exited the steam funnel 16 through the steam vents 18 and the fabric to be treated, into the suction inlet 27. Steam and air travels along a suction inlet path 38 in the suction duct 33 and passes the suction fan 36. Steam and air then travels along a suction outlet path 39 in the duct and out of the suction outlet vent 30 at the suction outlet 28.

Although in the embodiments described above the foam material 19, 35 coats the inner surface of the outer layer 13, 21, 31 to form an inner layer 14, 22, 32 along the steam passageway and/or suction passageway so that the steam only contacts the steam contact surface 20, 37 of the foam material 19, 35, it will be understood that the foam material 19, 35 may have alternative embodiments. For example, the foam material 19, 35 may only cover a section of the inner surface of the outer layer 13, 21, 31 so that at least a section of the head inner surface 17 and or the suction section inner surface 34 of the steam passageway and/or the suction passageway is formed by the foam material 19, 35 of the inner layer 14, 22, 32 and a portion of the head inner surface 17 and/or the suction section inner surface 34 of the steam passageway is formed by the outer layer 13, 21, 31. The steam passageway and suction passageway each form a passageway having an inner surface along which steam flows.

It will be appreciated that the term “comprising” does not exclude other elements or steps and that the indefinite article “a” or “an” does not exclude a plurality. A single processor may fulfil the functions of several items recited in the claims. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to an advantage. Any reference signs in the claims should not be construed as limiting the scope of the claims.

CLAIMS:

1. A steaming device component (4, 7, 25) comprising

a passageway (16, 23, 33) having an inner surface (17, 24, 34) along which steam may flow,

at least a section of the inner surface (17, 24, 34) being formed by a foam material (19, 35) having a ~~low~~ thermal conductivity of less than 1 W/mK such that the foam material (19, 35) reduces the rate of condensation on the inner surface (17, 24, 34), characterised in that~~.~~

~~2. The steaming device component (4, 7, 25) according to claim 1, wherein~~ the at least a section of the inner surface (17, 24, 34) ~~being~~ formed by the foam material (19, 35) is non-porous.

2~~3~~. The steaming device component (4, 7, 25) according to claim ~~2~~1, wherein the foam material (19, 35) is non-porous.

3~~4~~. The steaming device component (4, 7, 25) according to claim 1 or claim 2~~any one of the preceding claims~~, wherein the foam material (19, 35) is flexible.

4~~5~~. The steaming device component (4, 7, 25) according to any of claims 1 to 3~~4~~, wherein the inner surface (17, 24, 34) of the passageway (16, 23, 33) is formed by the foam material (19, 35).

5~~6~~. The steaming device component (4, 7, 25) according to any one of the preceding claims, wherein the passageway (16, 23, 33) comprises at least an outer layer (13, 21, 31) and an inner layer (14, 22, 32), the foam material (19, 35) forming the inner layer (14, 22, 32).

6~~7~~. The steaming device component (4, 7, 25) according to claim 5~~6~~, wherein the inner layer (14, 22, 32) is a coating.

78. The steaming device component (4, 7, 25) according to any one of claims 1 to 45, wherein the foam material (19, 35) forms the passageway (16, 23, 33).

89. The steaming device component (4, 7, 25) according to any one of the preceding claims, wherein the density of the foam material (19, 35) is less than 400 g/L.

910. The steaming device component (4, 7, 25) according to any one of the preceding claims, wherein the density of the foam material (19, 35) is greater than 20 g/L.

1011. The steaming device component (4, 7, 25) according to any one of the preceding claims, wherein the steaming device component comprises a steamer head (7, 25) and/or a steam hose (4) having the passageway (16, 23, 33) through which steam may flow.

1112. The steaming device component (25) according to any one of the preceding claims, wherein the steaming device component (25) further comprises a suction section (26).

~~13. The steaming device component (4, 7, 25) according to any one of the preceding claims, wherein the thermal conductivity of the foam material (19, 35) is less than 1 W/mK.~~

1214. The steaming device component (4, 7, 25) according to any one of the preceding claims, wherein the foam material (19) comprises a polymer.

1315. A steaming device (1) comprising the steaming device component (4, 7, 25) according to any preceding claim.