

[DESCRIPTION]

[Title of Invention]

STERILIZING INSTRUMENT AND STERILIZING DEVICE

[Technical Field]

[0001] The present invention relates to a sterilizing instrument and a sterilizing device for sterilizing a baby bottle or the like storing a drink, for example.

[Background Art]

[0002] A baby bottle or the like storing a drink such as artificial milk and having an artificial teat or the like attached to an opening portion thereof is used to provide the drink to an infant or the like.

This type of baby bottle or the like stores a drink that is given to an infant who does not yet have sufficient resistance to bacteria and so on, and must therefore be sterilized before use. For this purpose, a sterilizing device for sterilizing a baby bottle has been proposed in the prior art (PTL 1, for example).

[0003] In this sterilizing device, water or the like is heated by a heater or the like to form steam such as water vapor, and the steam is guided to the interior of a baby bottle disposed in the device. The steam circulates through the interior of the baby bottle by convection or the like, and in so doing, sterilizes the interior of the bottle.

More specifically, the baby bottle is disposed in the sterilizing device upside-down so as to cover a tubular air discharge portion from which the steam is discharged, and an opening

side of the baby bottle is brought into contact with the sterilizing device so that the opening of the baby bottle is supported by a support portion formed in the sterilizing device.

In this state, the steam discharged from the discharge portion of the sterilizing device convects through the baby bottle from a bottom side toward the opening side, and after sterilizing the interior of the baby bottle, the steam is discharged to the outside from the opening of the bottle.

The steam then passes between the opening of the baby bottle and the support portion so as to be discharged to the outside. In other words, the discharged steam is discharged through a gap between the opening of the baby bottle and the support portion of the sterilizing device.

[Citation List]

[Patent Literature]

[0004]

[PTL 1] Japanese Patent Application Publication No. 2015-100509

[Summary of Invention]

[Technical Problem]

[0005] However, when the steam is discharged through the gap between the opening of the baby bottle and the support portion of the sterilizing device, not all of the steam is discharged, and instead, a part of the steam turns into droplets and pools near the opening of the baby bottle and so on, thereby forming a “liquid pool”.

This “liquid pool” is heated to boiling point by the hot steam

convecting through the interior of the baby bottle, and may therefore fly out to the periphery while hot.

[0006] Hence, an object of the present invention is to provide a sterilizing instrument and a sterilizing device with which formation of a "liquid pool" such as that described above can be suppressed so as to prevent heated liquid from flying out to the periphery.

[Solution to Problem]

[0007] According to the present invention, this object is achieved by a sterilizing instrument including a medium supply portion for supplying a heated sterilizing medium to the interior of a sterilizing subject, and a support portion for supporting a sterilizing subject opening portion, which is an opening through which the sterilizing medium is discharged from the sterilizing subject, wherein the sterilizing medium discharged from the sterilizing subject opening portion is discharged to the outside through a gap portion formed between the support portion and the sterilizing subject opening portion, and a discharging portion for discharging, to the outside, the sterilizing medium that is not discharged through the gap portion is formed in the support portion.

[0008] According to this configuration, the sterilizing medium that is not discharged through the gap portion between the support portion and the sterilizing subject opening portion, of the heated sterilizing medium discharged from the sterilizing subject opening portion, is discharged from the discharging portion formed in the support portion.

Hence, formation of a "liquid pool", which occurs when the sterilizing medium collects between the support portion and the sterilizing subject opening portion, can be effectively prevented.

As a result, a situation in which the sterilizing medium forming the "liquid pool" is further heated to boiling point by a heating portion such as a heater provided in a sterilizing device so as to fly out to the periphery of the sterilizing instrument while hot can be reliably prevented from occurring.

[0009] Preferably, a guiding portion for guiding, to the discharging portion, the sterilizing medium that has not been discharged through the gap portion is formed in the support portion.

[0010] According to this configuration, by forming the guiding portion, the sterilizing medium that has not been discharged through the gap portion can be guided to the discharging portion more quickly. As a result, a "liquid pool" is less likely to form.

[0011] Preferably, the guiding portion includes an inclined surface, and the inclined surface inclines downward toward the discharging portion.

[0012] Preferably, the support portion includes a top portion support portion that supports a top portion side of the sterilizing subject opening portion and a side face support portion that supports a side face side of the sterilizing subject opening portion, the top portion support portion is formed to extend from a base end portion of the medium supply portion to a base end portion of the side face support portion, and the discharging portion is formed in the top portion support portion.

[0013] According to this configuration, the discharging portion is formed in the top portion support portion, and therefore, when the sterilizing subject opening portion is disposed so as to be supported by the side face support portion, the discharging portion is covered by the sterilizing subject.

As a result, a situation in which foreign matter or the like from the outside of the sterilizing instrument infiltrates through the discharging portion while the sterilizing instrument sterilizes the sterilizing subject can be forestalled.

[0014] Preferably, the inclined surface is formed in the top portion support portion so as to extend from the base end portion of the medium supply portion to the base end portion of the side face support portion, excluding the discharging portion.

[0015] According to this configuration, the inclined surface is formed in the top portion support portion so as to extend from the base end portion of the medium supply portion to the base end portion of the side face support portion, excluding the discharging portion.

Hence, over an entire range of the top portion support portion from the base end portion of the side face support portion to the discharging portion, even when water vapor or the like serving as the sterilizing medium turns into droplets and adheres thereto, the droplets are guided to the discharging portion by the inclined surface and discharged to the outside from the discharging portion, and as a result, formation of the "liquid pool" can be effectively prevented.

[0016] Preferably, the discharging portion is formed in the top portion support portion in the vicinity of the side face support portion.

[0017] According to this configuration, the discharging portion is formed in a part of the top portion support portion in the vicinity of the side face support portion, and therefore the discharging portion is disposed in a position further removed from the medium supply portion.

Accordingly, the sterilizing medium is guided in a direction heading away from the medium support portion that supplies the heated sterilizing medium, and therefore the sterilizing medium is less likely to be heated by the hot steam or the like convecting through the interior of the sterilizing subject. Hence, the steam or the like can be reliably prevented from flying out to the periphery of the sterilizing device while hot, and as a result, safety is improved.

Further, the discharging portion exists in a direction heading away from the medium supply portion, and therefore does not affect an operation for supplying the heated sterilizing medium to the sterilizing subject and so on (generating an appropriate upward air flow and the like). As a result, sterilizing can be implemented more effectively.

[0018] A sterilizing device preferably includes a sterilizing device main body portion having a heating portion and a medium storage portion for storing the sterilizing medium, and a sterilizing instrument.

[Advantageous Effects of Invention]

[0019] According to the present invention, it is possible to provide a sterilizing instrument and a sterilizing device with which formation of a "liquid pool" such as that described above can be suppressed so as to prevent heated liquid from flying out to the periphery.

[Brief Description of Drawings]

[0020]

[Fig. 1]

Fig. 1 is a schematic view showing a main configuration of a sterilizing device according to a first embodiment of the present invention.

[Fig. 2]

Fig. 2 is a schematic sectional view showing a sterilizing device main body and so on of the sterilizing device shown in Fig. 1.

[Fig. 3]

Fig. 3 is a schematic perspective view showing an artificial teat, a cap, and a hood.

[Fig. 4]

Fig. 4 is a schematic perspective view showing the interior and so on of a component disposing portion of Fig. 1.

[Fig. 5]

Fig. 5 is a schematic view showing a component placing portion of Fig. 4.

[Fig. 6]

Fig. 6 is a schematic perspective view showing a container disposing

portion of Figs. 1 and 2.

[Fig. 7]

Fig. 7 is a schematic plan view of the container disposing portion.

[Fig. 8]

Fig. 8 is a schematic enlarged sectional view showing a part indicated by an arrow X in Fig. 2.

[Fig. 9]

Fig. 9 is a schematic enlarged sectional view showing a state in which a cross-section is formed on a B-B' line in Figs. 1 and 6.

[Fig. 10]

Fig. 10 is a schematic view showing a main configuration of a container disposing portion serving as an example of a sterilizing instrument according to a second embodiment of the present invention.

[Description of Embodiments]

[0021] Preferred embodiments of the present invention will be described in detail below with reference to the figures.

Note that the embodiments described below are preferred specific examples of the present invention, and therefore various preferred technical limitations are applied thereto. However, unless specific description indicating limitations on the present invention is provided below, the scope of the present invention is not limited to the following embodiments.

[0022] (First Embodiment)

Fig. 1 is a schematic view showing a main configuration of a sterilizing device 1 according to a first embodiment of the present

invention. The sterilizing device 1 shown in Fig. 1 is a device for sterilizing a baby bottle 100 serving as an example of a sterilizing subject.

As shown in Fig. 1, the sterilizing device 1 includes a case 10 covering a sterilizing device main body 20, to be described below.

[0023] An overall shape of the case 10 when seen from above is substantially circular, for example, such that a side face side thereof forms a smooth surface with no angular portions.

Note that in this embodiment, the overall shape of the case 10 when seen from above is substantially circular, but the present invention is not limited to this shape, and the case 10 may of course have another overall shape such as a box shape.

[0024] Further, an operating portion 11 having a substantially inverse triangular overall shape is disposed on a front face side in Fig. 1, and eight, for example, substantially circular operating buttons 11a to 11h are formed on the operating portion 11.

Thus, a user of the sterilizing device 1 can sterilize the baby bottle 100 by operating the operating button 11a and so on.

[0025] Fig. 2 is a schematic sectional view showing the sterilizing device main body 20 and so on of the sterilizing device 1 shown in Fig. 1.

As shown in Fig. 2, the sterilizing device 1 includes a base portion 30 on a lower side thereof, and the base portion 30 includes a water storage portion 32 serving as an example of a medium storage portion capable of storing a predetermined amount of unheated water or medicinal solution serving as an example of a sterilizing medium.

The base portion 30 also includes a heater 31 serving as an example of a heating portion for heating the water or the like stored in the water storage portion 32 in order to form water vapor that is actually supplied to the interior of the baby bottle 100.

Note that the base portion 30 including the heater 31, the water storage portion 32, and so on serves as an example of a sterilizing device main body portion.

[0026] As shown in Fig. 1, a component disposing portion 40 having a substantially cylindrical overall shape is formed above the base portion 30.

Accessories of the baby bottle 100, such as an artificial teat 50, a cap 51, and a hood 52, for example, are disposed in the component disposing portion 40 to be sterilized.

[0027] Fig. 3 is a schematic perspective view showing the artificial teat 50, the cap 51, and the hood 52.

The artificial teat 50 shown in Fig. 3 is held by the cap 51 and fixed to the baby bottle 100 so that an infant can suckle artificial milk stored in the baby bottle 100 through the artificial teat 50.

Further, the hood 52 covers the artificial teat 51, which is inserted directly into the mouth of the infant, thereby functioning to protect the artificial teat 51 from exterior dirt and the like.

[0028] Fig. 4 is a schematic perspective view showing the interior and so on of the component disposing portion 40 shown in Fig. 1. As shown in Fig. 4, the component disposing portion 40 is configured to be substantially cylindrical and so that the base

portion 30 side is visible from a lower side thereof.

More specifically, an upper portion of the water storage portion 32 of the base portion 30 shown in Fig. 2 is constituted by an opening, and a component placing portion 33 through which water vapor can pass and on which a component or the like can be disposed without falling is formed in the opening.

[0029] Fig. 5 is a schematic view showing the component placing portion 33 shown in Fig. 4. As shown in Fig. 5, water vapor passage portions 33a constituted by openings are formed in seven locations in the component placing portion 33, and a placing portion 33b serving as a part on which a component or the like can be carried is also formed in the component placing portion 33.

Hence, by disposing the artificial teat 50, the cap 51, and the hood 52 on the placing portion 33b, as shown in Fig. 2, these components can be sterilized by water vapor generated by heating the water in the water storage portion 32 shown in Fig. 2 without falling into the water storage portion 32.

[0030] Furthermore, as shown in Fig. 2, a container disposing portion 60 serving as an example of a sterilizing instrument is placed on an upper portion of the component disposing portion 40.

The container disposing portion 60 is configured to be attachable to and detachable from the component disposing portion 40 so that when the artificial teat 50 and so on are to be disposed in the component disposing portion 40, the container disposing portion 60 is detached, whereupon the artificial teat 50 and so on are inserted and disposed.

[0031] Further, the container disposing portion 60 includes a chimney portion 61 serving as an example of a substantially cylindrical medium supply portion formed to project upward.

A lower side opening of the chimney portion 61 is connected to the component disposing portion 40 such that the water vapor generated by the heater 31 is guided into the interior of the chimney portion 61 through the component disposing portion 40.

In other words, the water vapor moves toward an upper portion opening of the chimney portion 61 while being guided by a water vapor guiding surface 61a serving as an inner surface of the chimney portion 61.

Note that in this embodiment, an example in which the chimney portion 61 is provided singly is shown, but the present invention is not limited thereto, and a plurality of chimney portions may be disposed.

[0032] Here, the baby bottle 100 that is sterilized by the sterilizing device 1 will be described.

The baby bottle 100 includes a bottle opening portion 110 serving as an example of a sterilizing subject opening portion to which the artificial teat 50 is attached via the cap 51 after filling the baby bottle 100 with artificial milk.

A screw 111 for screwing the baby bottle 100 to the cap 51 is formed on the bottle opening portion 110.

[0033] Further, the baby bottle 100 has a substantially closed-bottom cylindrical overall shape, and therefore a bottom portion 112 and a side portion 113 in which the artificial milk

or the like collects are provided on an opposite side to the bottle opening portion 110, i.e. an upper portion side in Fig. 2.

In other words, the artificial milk is stored in a bottle interior 114 of the baby bottle 100, which is formed from the bottom portion 112 and the side portion 113.

Note that in this embodiment, the length of the chimney portion 61 is preferably set to be, for example, at least half the length from the bottle opening portion 110 to the bottom portion 112 of the baby bottle 100.

[0034] Fig. 6 is a schematic perspective view showing the container disposing portion 60 of Figs. 1 and 2, and Fig. 7 is a schematic plan view of the container disposing portion 60.

As shown in Figs. 6 and 7, the container disposing portion 60 is substantially circular when seen from above, and the substantially cylindrical chimney portion 61 described above is disposed substantially in the center thereof while a bottle support portion 70 serving as an example of a support portion for supporting the bottle opening portion 110 of the baby bottle 100 is formed on the periphery thereof.

[0035] As shown in Figs. 6 and 7, a top portion support portion 71 that contacts and supports a top portion of the bottle opening portion 110 of the baby bottle 100 is formed on an inner peripheral side (the chimney portion 61 side) of the bottle support portion 70. Further, a side face support portion 72 that contacts and supports a side face portion of the bottle opening portion 110 is provided on an outer side of the top portion support portion 71

so as to project upwards from the top portion support portion 71.

[0036] Fig. 8 is a schematic enlarged sectional view showing a part indicated by an arrow X in Fig. 2. The cross-section shown in Fig. 2 is a schematic sectional view showing a state in which a cross-section is formed along an A-A' line shown in Figs. 1 and 6.

Further, Fig. 9 is a schematic enlarged sectional view showing a state in which a cross-section is formed along a B-B' line shown in Figs. 1 and 6.

[0037] The top portion support portion 71 and the side face support portion 72 shown in Fig. 6 and so on will now be described using Figs. 6 to 9 and so on.

As shown in Fig. 6, the top portion support portion 71 is formed with a top portion contact portion 71a that contacts and supports a top portion 115 of the bottle opening portion 110 of the baby bottle 100 when the bottle opening portion 110 is disposed thereon. Further, the side face support portion 72 on the outer side of the top portion support portion 71 is formed with a side face contact portion 72a corresponding to the top portion contact portion 71a.

Fig. 9 shows respective configurations of the top portion contact portion 71a and the side face contact portion 72a. More specifically, as shown in Fig. 9, when the screw 111 serving as an example of the side face side of the bottle opening portion 110 contacts the side face support portion 72a, the top portion 115 of the bottle opening portion 110 contacts the top portion contact portion 71a, and as a result, the baby bottle 100 is supported

reliably by the top portion contact portion 71a and the side face support portion 72a.

[0038] Hence, the baby bottle 100 is supported by the top portion contact portion 71a and the side face support portion 72a with stability, and when the weight of the baby bottle 100 itself is applied to the top portion contact portion 71a, the baby bottle 100 is placed on the sterilizing device 1 with even more stability.

Furthermore, according to this embodiment, no special devices are required to dispose the baby bottle 100 with stability on the sterilizing device 1, and therefore the sterilizing device 1 can be used extremely easily by a mother or the like to sterilize the baby bottle 100.

[0039] Incidentally, when the sterilizing device 1 sterilizes using the heat of heated steam, as in this embodiment, it is necessary to ensure that the baby bottle 100 does not become detached from the sterilizing device 1 during use.

When a special device is used to ensure that the baby bottle 100 does not become detached, however, the user of the device 1 may not necessarily be a mother or the like who is skilled at operating the device, and moreover, due to restrictions on the use location and so on, the device may be difficult to use.

Hence, in this embodiment, the sterilizing device 1 is configured to be easy to use by a mother or the like, and so that the baby bottle 100 does not easily become detached therefrom.

In particular, the baby bottle 100 can be held more reliably when an opening diameter of the bottle opening portion 110 of the

baby bottle 100 corresponds to a diameter of the side face support portion 72a shown in Fig. 6 and so on.

[0040] Incidentally, as shown in Figs. 6 and 8, a plurality of drop holes 71c serving as an example of a water vapor discharging portion are formed in the top portion support portion 71. The drop holes 71c are configured as through holes for guiding a liquid or the like to the component disposing portion 40 side in Fig. 1.

In this embodiment, the drop holes 71c are disposed on a base end portion side of the chimney portion 61.

[0041] As shown in Figs. 6 and 8, inclined surfaces 71b serving as an example of a guiding portion for guiding a liquid or the like to the drop holes 71c are formed in parts of the top portion support portion 71 where the drop holes 71c are formed.

Further, recessed support portions 72b are formed in parts of the side face support portion 72 corresponding to the inclined surfaces 71b by forming recessed grooves.

As shown in Fig. 8, the inclined surfaces 71b are formed continuously so as to incline gradually downward from base end portions of the recessed support portions 72b toward the drop holes 71c.

[0042] As shown in Fig. 8, when the bottle opening portion 110 of the baby bottle 100 is disposed in a position corresponding to the inclined surfaces 71b and the recessed support portions 72b, the bottle opening portion 110 does not contact the inclined surfaces 71b and the recessed support portions 72b, and as a result, gaps are opened such that a gap portion is formed.

[0043] Hence, in this embodiment, as shown in Fig. 2, when the bottle opening portion 110 is disposed in the container disposing portion 60, the bottle opening portion 110 is supported reliably by the top portion contact portion 71a and the side face contact portion 72a shown in Fig. 6, while fixed intervals (gaps) are formed between the bottle opening portion 110 and the inclined surfaces 71b and recessed support portions 72b shown in Fig. 6.

[0044] Further, the "top portion contact portion 71a and side face contact portion 72a" and the "inclined surfaces 71b and recessed support portions 72b" are disposed alternately so as to be adjacent to each other.

[0045] Furthermore, as shown in Figs. 8 and 9, a plurality of air vents 63 serving as examples of air vents through which air passes between the inside of the recessed support portions 72b and the side face support portion 72a and the outside are formed on a base end side, for example, of the recessed support portions 72b and the side face support portion 72a.

[0046] An operation and so on of the sterilizing device 1 according to this embodiment, having the above configuration, will now be described.

First, a mother or the like serving as an example of a user removes the artificial teat 50, the cap 51, and the hood 52 from the baby bottle 100 used to feed artificial milk to an infant.

The mother or the like then detaches the container disposing portion 60 shown in Figs. 1, 2, and so on from the component disposing portion 40, and as shown in Fig. 2, for example, places the

artificial teat 50, the cap 51, and the hood 52 in a combined state on the placing portion 33b shown in Fig. 5 in the component disposing portion 40 in the state shown in Fig. 4.

[0047] Further, the mother or the like injects a predetermined amount of water or medicinal solution into the water storage portion 32 of the base portion 30 shown in Fig. 2.

Next, the mother or the like reattaches the container disposing portion 60 to the component disposing portion 40, turns the baby bottle 100 so that the bottle opening portion 110 side faces downward, or in other words turns the baby bottle 100 upside-down, and in this state, disposes the bottle opening portion 110 of the baby bottle 100 on the bottle support portion 70 of the container disposing portion 60, shown in Fig. 6.

At this time, as long as the diameter of the bottle opening portion 110 of the baby bottle 100 corresponds to the opening diameter of the side face support portion 72a, shown in Fig. 9, of the container disposing portion 60 of the sterilizing device 1, the sterilizing device 1 can hold the baby bottle 1 reliably, as shown in Fig. 9.

[0048] At this point, a preparation stage is complete, and a sterilizing process is started. First, the mother or the like starts the sterilizing device 1 by operating the operating buttons 11a to 11h shown in Fig. 1.

In response, the heater 31 is driven to heat the water in the water storage portion 32, and as a result, water vapor is generated. The generated water vapor rises upwards, passes through the water

vapor passage portions 33a of the base portion 30, shown in Fig. 5, and then continues to rise while sterilizing the artificial teat 50 and so on disposed in the component disposing portion 40.

[0049] Next, the water vapor reaches the container disposing portion 60, rises through the chimney portion 61 of the container disposing portion 60 along the water vapor guiding surface 61a, and then moves from the upper portion opening of the chimney portion 61 toward the bottom portion 112 of the baby bottle 100 (an arrow Y in Fig. 2).

[0050] Next, the water vapor, having reached the bottom portion 112, descends along the side portion 113 of the baby bottle 100, and then passes through the gap portion between the side portion 113 and the chimney portion 61 so as to reach the bottle opening portion 110 (the arrow Y in Fig. 2).

Thus, the water vapor moves through the baby bottle 100 in a constant flow.

[0051] Next, as shown by an arrow Y in Fig. 8, the water vapor passes through the gaps between the inclined surfaces 71b and the top portion 115 of the bottle opening portion 110, and is then discharged to the outside from the container disposing portion 60 through intervals (gaps) formed between the screw 111 of the bottle opening portion 110 and the recessed support portions 72b.

As a result, an occurrence of an undesired happening resulting from the overfill of the interior of the baby bottle 100 with water vapor can be forestalled.

[0052] Furthermore, in this embodiment, as shown by the arrow

Y in Fig. 2, the water vapor moves from the chimney portion 61 toward the bottom portion 112 of the baby bottle 100, and therefore a desired temperature, for example 98°C, is reached in a short time, for example one minute.

As a result, the part that is most difficult to increase in temperature can be sterilized in only one minute, and therefore sterilizing can be achieved quickly.

[0053] Moreover, in this embodiment, as shown in Fig. 6, the "top portion contact portion 71a and side face contact portion 72a" and the "inclined surfaces 71b and recessed support portions 72b" are disposed alternately so as to be adjacent to each other.

Therefore, the bottle opening portion 110 of the baby bottle 100 can be held reliably by the parts thereof contacting the "top portion contact portion 71a and side face contact portion 72a", while in the parts corresponding to the "inclined surfaces 71b and recessed support portions 72b", the water vapor in the baby bottle 100 can be discharged reliably to the outside.

[0054] Furthermore, in this embodiment, as shown in Fig. 8 and so on, the plurality of air vents 63 are formed on the base end portion side of the recessed support portions 72b and so on, and therefore discharge of the water vapor to the outside, as indicated by the arrow Y, is realized through the air vents 63 as well as the gaps formed between the screw 111 of the bottle opening portion 110 and the recessed support portions 72b. As a result, the water vapor can be discharged more effectively, and the constant flow

of water vapor indicated by the arrow Y can be generated efficiently.

[0055] Incidentally, during the process in which the water vapor convects in the direction of the arrow Y in Fig. 8, a part of the water vapor may turn into droplets, and the droplets may collect near the bottle opening portion 110 of the baby bottle 100 and so on, forming a "liquid pool".

This "liquid pool" may then be heated to boiling point by the hot steam convecting through the interior of the baby bottle 100, and may fly out to the periphery while hot.

[0056] Regarding this point, in this embodiment, even when water vapor or the like that has not been discharged turns into droplets, the droplets are guided to the drop holes 71c along the inclined surfaces 71b shown in Fig. 8, whereupon the droplets are discharged to the exterior of the container disposing portion 60 through the drop holes 71c.

Hence, formation of the "liquid pool" described above can be forestalled, and as a result, hot liquid can be prevented from flying out to the periphery.

[0057] Moreover, in this embodiment, when the baby bottle 100 is disposed in the container disposing portion 60, as shown in Fig. 8, the drop holes 71c are covered by the baby bottle 100.

As a result, a situation in which foreign matter or the like enters the drop holes 71c from the outside during an operation of the sterilizing device 1 can be forestalled.

[0058] Furthermore, in this embodiment, as shown in Figs. 6 and 8, the inclined surfaces 71b are formed continuously so as to incline

gradually downward from the respective base end portions of the recessed support portions 72b toward the drop holes 71c.

Hence, even when the water vapor turns into droplets in the top portion support portion 71 and adheres to random positions on the inclined surfaces 71b, the droplets are guided to the drop holes 71c by the inclined surfaces 71b and discharged through the drop holes 71c. In other words, formation of the "liquid pool" described above can be forestalled over the entire range of the top portion support portion 71 between the base ends of the recessed support portions 72b and the drop holes 71c.

[0059] (Second Embodiment)

Fig. 10 is a schematic view showing a main configuration of a container disposing portion 160 serving as an example of a sterilizing instrument according to a second embodiment of the present invention.

The main configuration of the container disposing portion 160 according to this embodiment is similar to that of the container disposing portion 160 according to the first embodiment, and therefore identical configurations and so on have been allocated identical reference symbols and the like, and description thereof has been omitted, while the following description focuses on differences.

[0060] In this embodiment, drop holes 171c serving as an example of the discharging portion are formed in parts of the top portion support portion on the respective base end sides (serving as an example of the vicinity of the side face support portion) of the

recessed support portions 72b.

The inclined surfaces 171b, meanwhile, are formed continuously so as to incline gradually downward from the base end side of the chimney portion 61 toward the drop holes 71c.

Hence, the drop holes 171b exist in a direction further removed from the chimney portion 61 than the drop holes 71c according to the first embodiment, and therefore the water vapor that turns into droplets is discharged to the exterior of the container disposing portion 60 without affecting an operation for supplying water vapor to the baby bottle 100 and so on (for example, generating an appropriate upward air flow and the like). As a result, sterilizing can be implemented more effectively.

[0061] The present invention is not limited to the embodiments described above, and may be subjected to various modifications within a scope that does not depart from the scope of the claims.

In contrast to the first and second embodiments described above, the container disposing portions 60, 160 used in these embodiments do not have to be used as a part of the sterilizing device 1 and may be used in combination with another configuration.

For example, container disposing portions 60, 160 that are disposed on a container such as a pot housing boiling water or the like and used to sterilize a drink container such as the baby bottle 100 are also included in the sterilizing instrument of the present invention.

Likewise when used in this manner, the container disposing portions 60, 160 can sterilize the interior of the drink container

disposed thereon under similar principles to the first and second embodiments, i.e. by guiding steam such as water vapor generated from the pot or other container such that the steam convects through the interior of the drink container.

[0062] Further, the height of the chimney portion 61 is to be set so that steam or the like at a sufficient temperature for sterilizing the bottom portion 112 of the baby bottle 100 can reach the bottom portion 112, and in this embodiment, the height of the chimney portion 61 is set to be at least half the length (height) from the bottle opening portion 110 to the bottom portion 112 of the baby bottle 100, for example. The present invention is not limited thereto, however, and the length of the chimney portion 61 may be modified in accordance with the size and height of the baby bottle 100 to be sterilized. Moreover, the chimney portion may be formed to be capable of expanding and contracting.

Furthermore, the bottle support portion 70 may be modified as appropriate to conform to baby bottles 100 of various sizes.

[Reference Signs List]

[0063]

- 1 Sterilizing device
- 10 Case
- 11a to 11h Operating button
- 20 Sterilizing device main body
- 30 Base portion
- 31 Heater
- 32 Water storage portion

33 Component placing portion
33a Water vapor passage portion
33b Placing portion
40 Component disposing portion
50 Artificial teat
51 Cap
52 Hood
60, 160 Container disposing portion
61 Chimney portion
61a Water vapor guiding surface
63 Air vent
70 Bottle support portion
71 Top portion support portion
71a Top portion contact portion
71b, 171b Inclined surface
71c, 171c Drop hole
72 Side face support portion
72a Side face contact portion
72b Recessed support portion
100 Baby bottle
110 Bottle opening portion
111 Screw
112 Bottom portion
113 Side portion
114 Bottle interior

[CLAIMS]

[Claim 1]

A sterilizing instrument comprising:

a medium supply portion for supplying a heated sterilizing medium to the interior of a sterilizing subject; and

a support portion for supporting a sterilizing subject opening portion, which is an opening through which the sterilizing medium is discharged from the sterilizing subject,

wherein the sterilizing medium discharged from the sterilizing subject opening portion is discharged to the outside through a gap portion formed between the support portion and the sterilizing subject opening portion, and

a discharging portion for discharging, to the outside, the sterilizing medium that is not discharged through the gap portion is formed in the support portion.

[Claim 2]

The sterilizing instrument according to claim 1, wherein a guiding portion for guiding, to the discharging portion, the sterilizing medium that has not been discharged through the gap portion is formed in the support portion.

[Claim 3]

The sterilizing instrument according to claim 2, wherein the guiding portion includes an inclined surface, and the inclined surface inclines downward toward the discharging portion.

[Claim 4]

The sterilizing instrument according to any one of claims 1

to 3, wherein the support portion includes:

a top portion support portion that supports a top portion side of the sterilizing subject opening portion; and

a side face support portion that supports a side face side of the sterilizing subject opening portion,

the top portion support portion is formed to extend from a base end portion of the medium supply portion to a base end portion of the side face support portion, and

the discharging portion is formed in the top portion support portion.

[Claim 5]

The sterilizing instrument according to claim 4, wherein the inclined surface is formed in the top portion support portion so as to extend from the base end portion of the medium supply portion to the base end portion of the side face support portion, excluding the discharging portion.

[Claim 6]

The sterilizing instrument according to claim 4 or 5, wherein the discharging portion is formed in the top portion support portion in the vicinity of the side face support portion.

[Claim 7]

A sterilizing device comprising:

a sterilizing device main body portion including a heating portion and a medium storage portion for storing the sterilizing medium; and

the sterilizing instrument according to any one of claims 1

to 6.