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Jin(10) **Pub. No.: US 2016/0045010 A1**(43) **Pub. Date: Feb. 18, 2016**(54) **STEAM GEL/NAIL POLISH REMOVER AND
METHOD OF REMOVING GEL/NAIL POLISH****Publication Classification**(71) Applicant: **Wenri Jin**, Foshan (CN)(72) Inventor: **Wenri Jin**, Foshan (CN)(21) Appl. No.: **14/871,141**(22) Filed: **Sep. 30, 2015**(51) **Int. Cl.****A45D 29/00** (2006.01)(52) **U.S. Cl.****CPC** **A45D 29/007** (2013.01)

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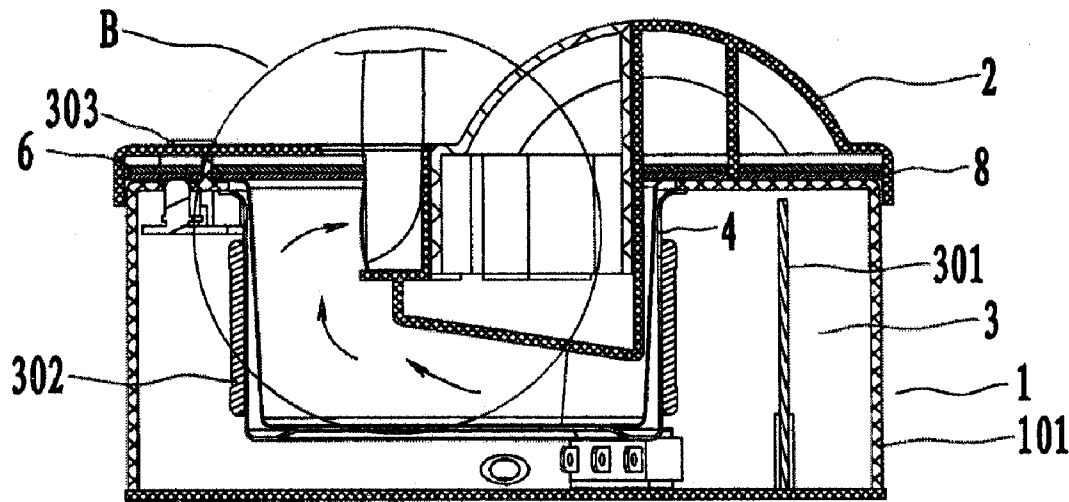
ABSTRACT

A steam gel polish and/or nail polish remover includes a main body and an end cover; the main body includes a shell, a vaporizer in the shell and a pot liner to contain the polish removing solution; at least one opening is on the surface of the end cover for accommodating human fingers; the inner surface of the end cover is covered with a silicone rubber sealing ring, containing at least one insertion hole to respectively coordinate with the opening; when human fingers are pushed into the at least one opening, the fingers will be tightly pressed and fit to the at least one insertion hole.

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filed on Sep. 24, 2014.**Foreign Application Priority Data**

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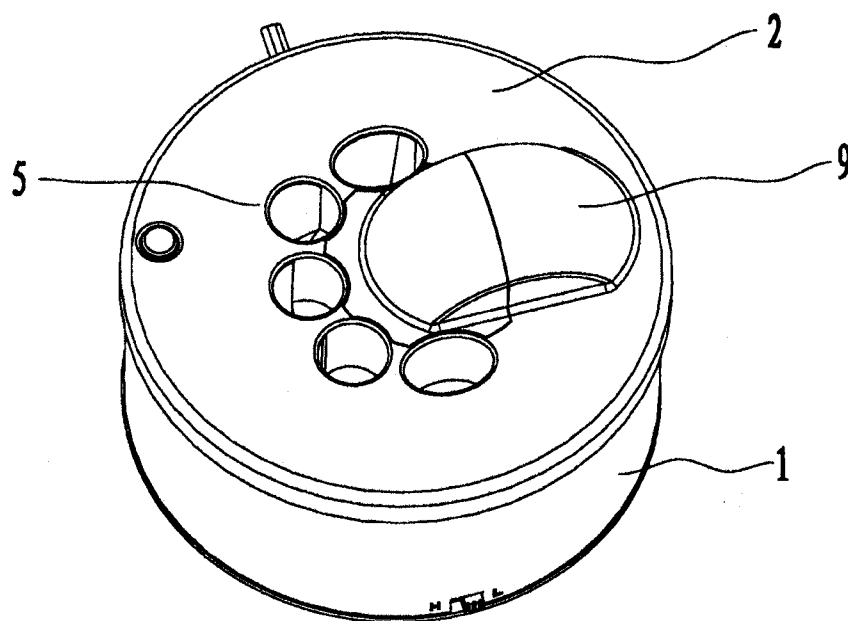


Fig.1

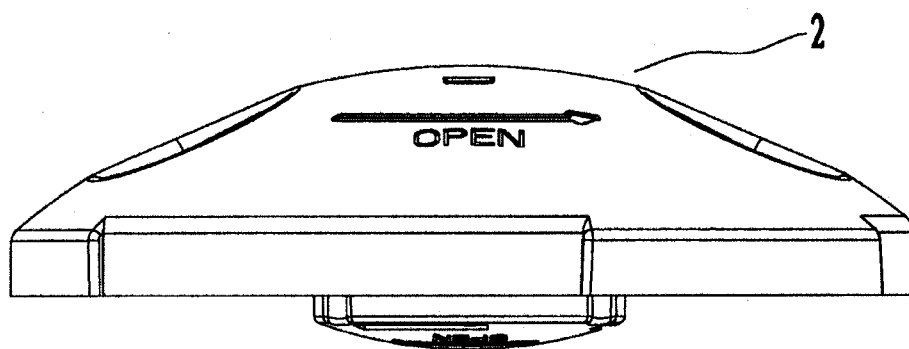


Fig.2

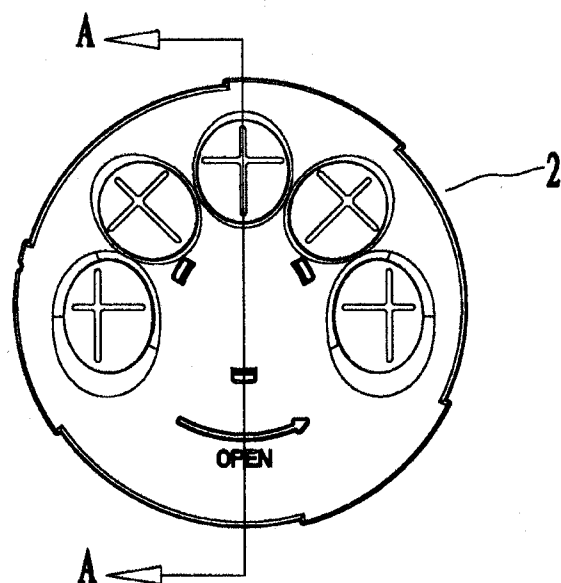
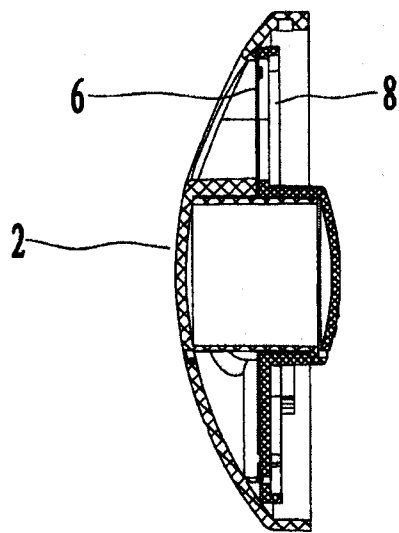


Fig.3



A-A

Fig.4

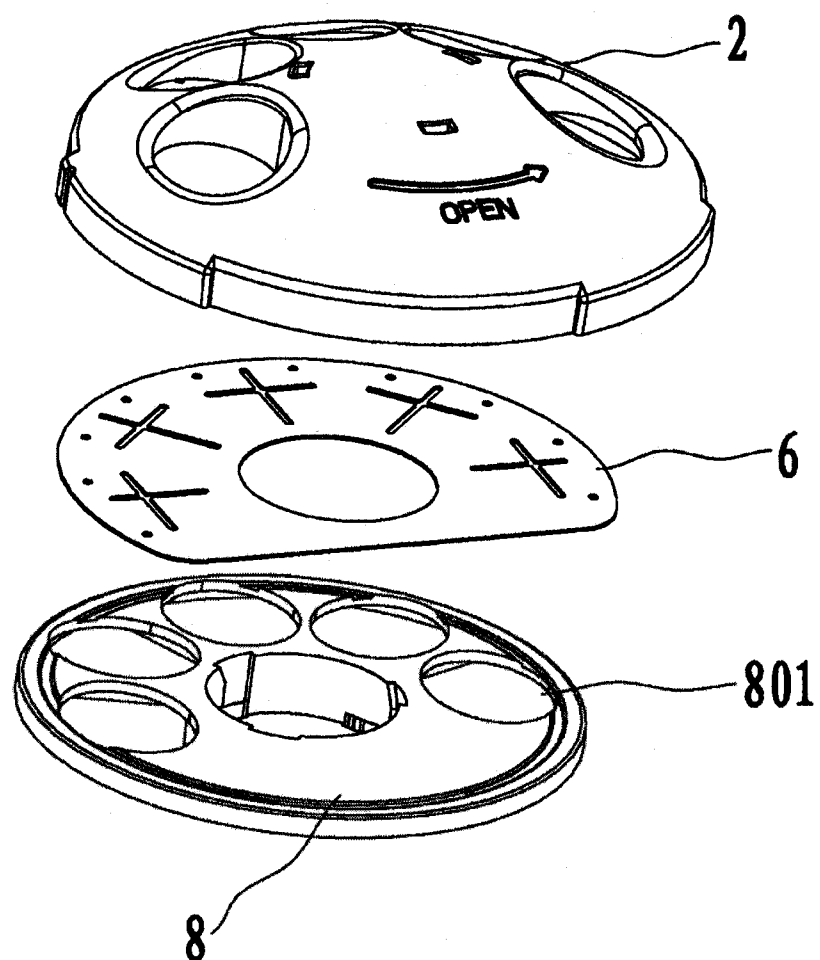


Fig.5

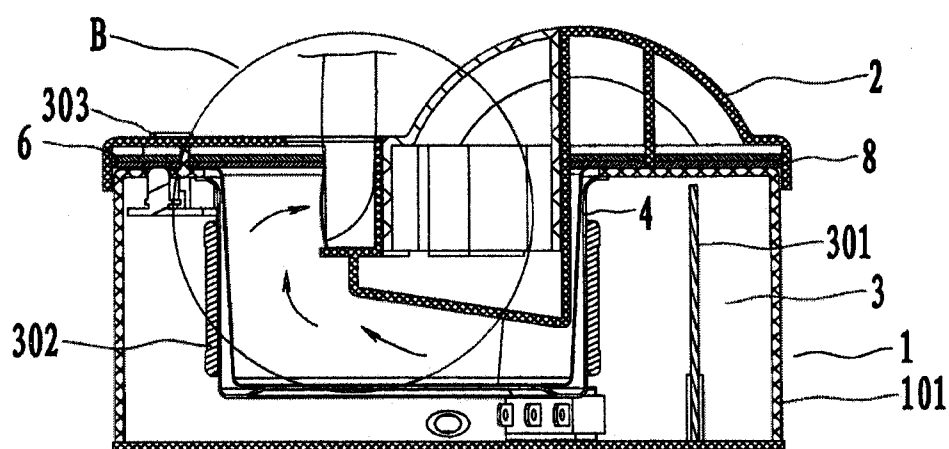


Fig.6

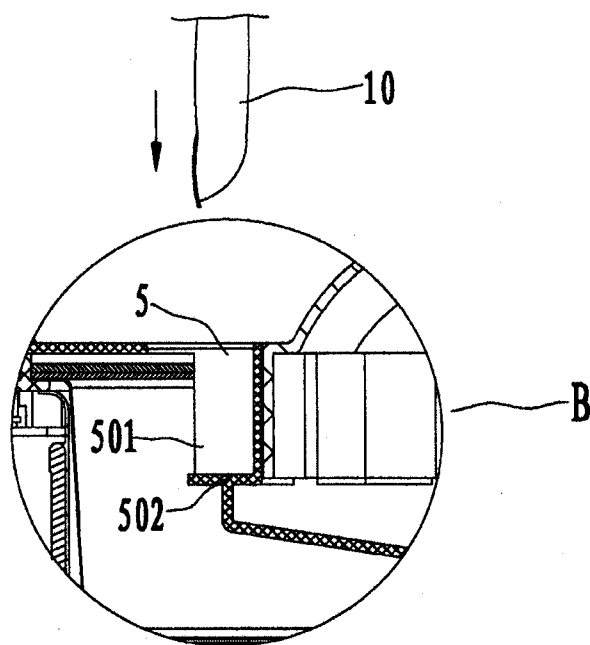


Fig.7

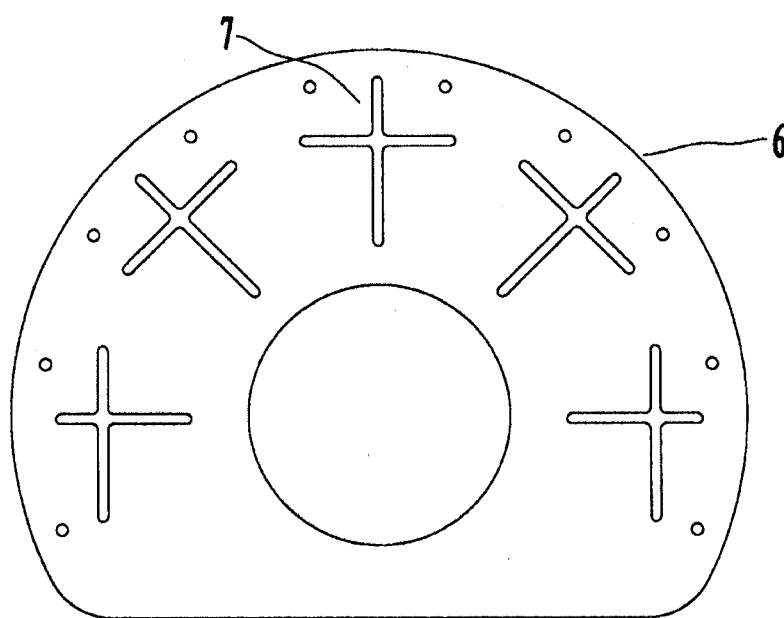


Fig.8

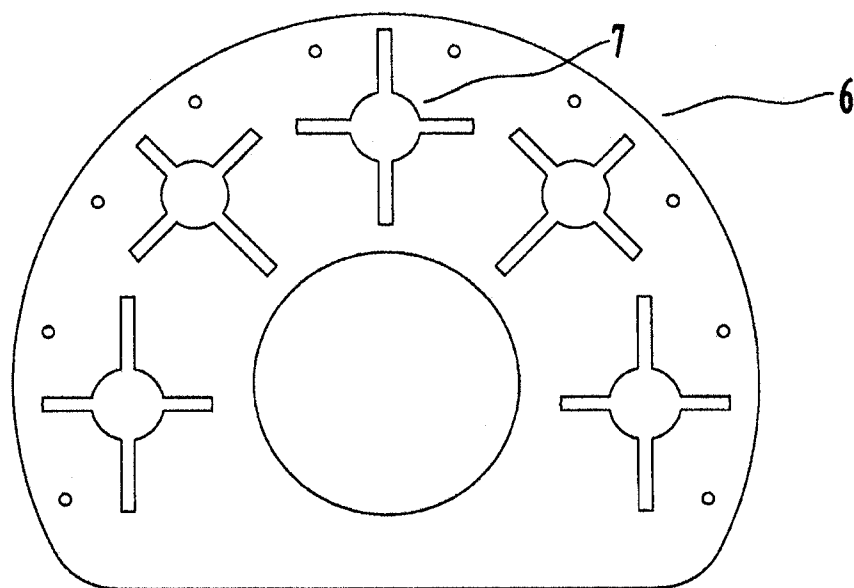


Fig.9

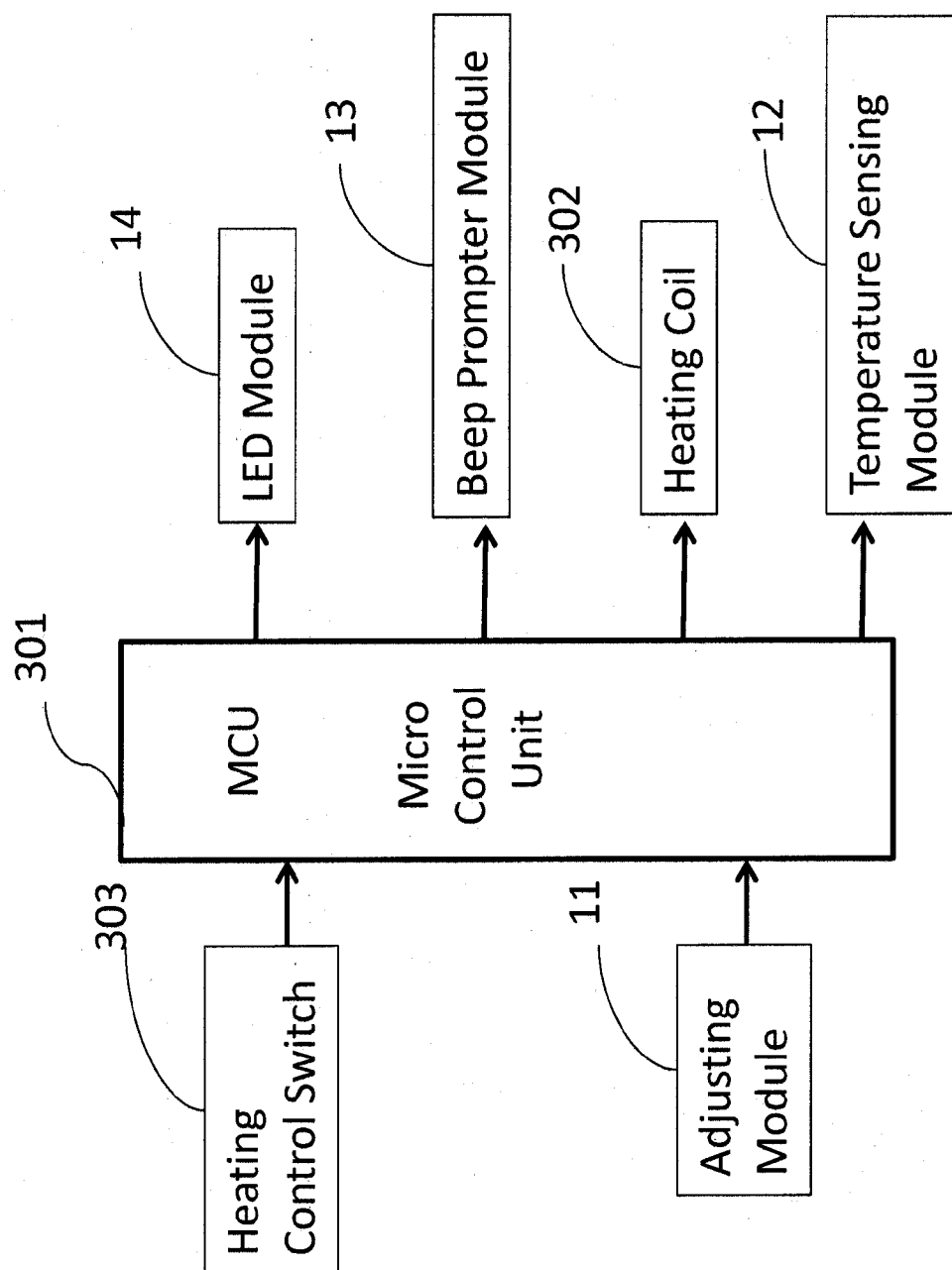


FIG. 10

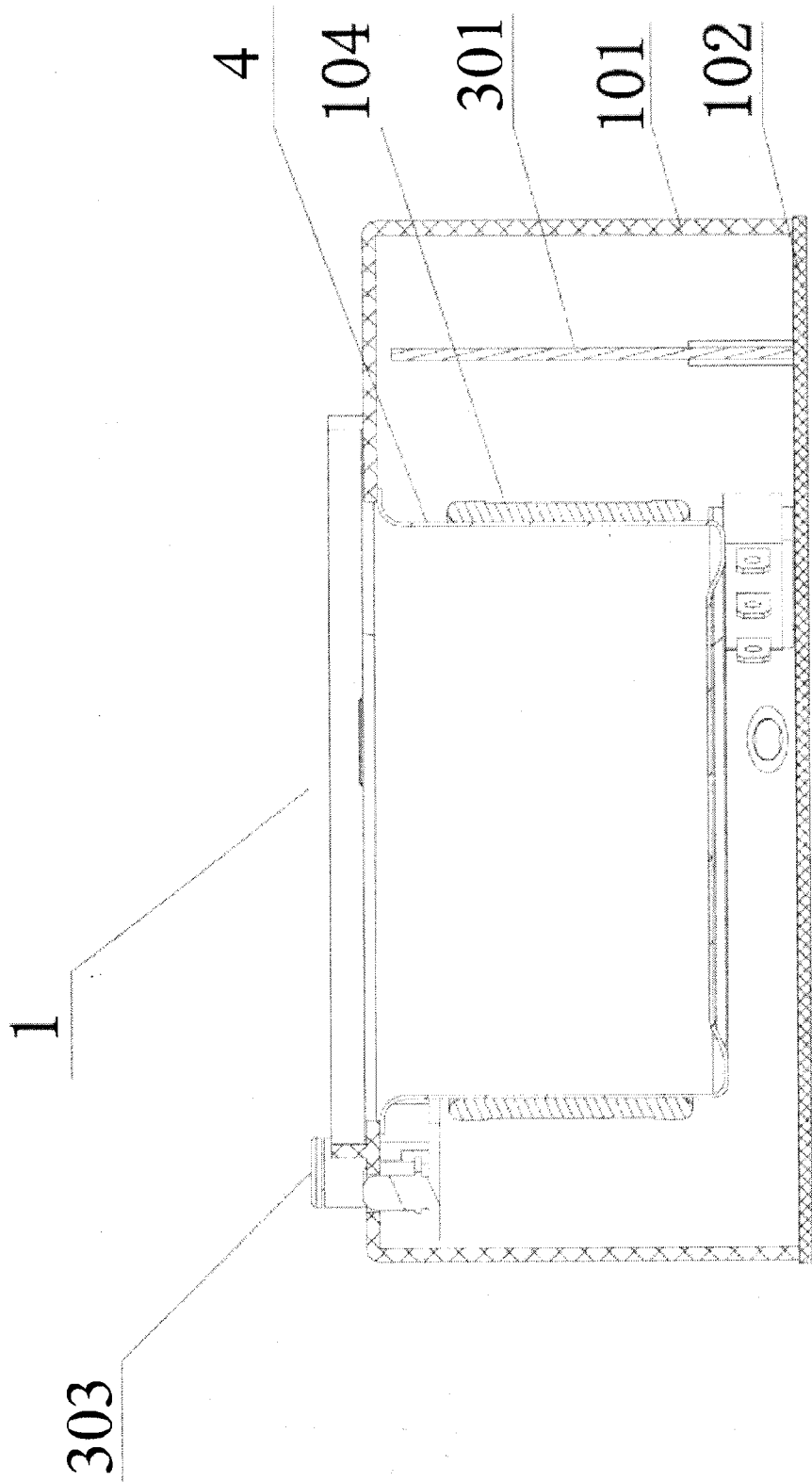


FIG. 11

FIG. 12

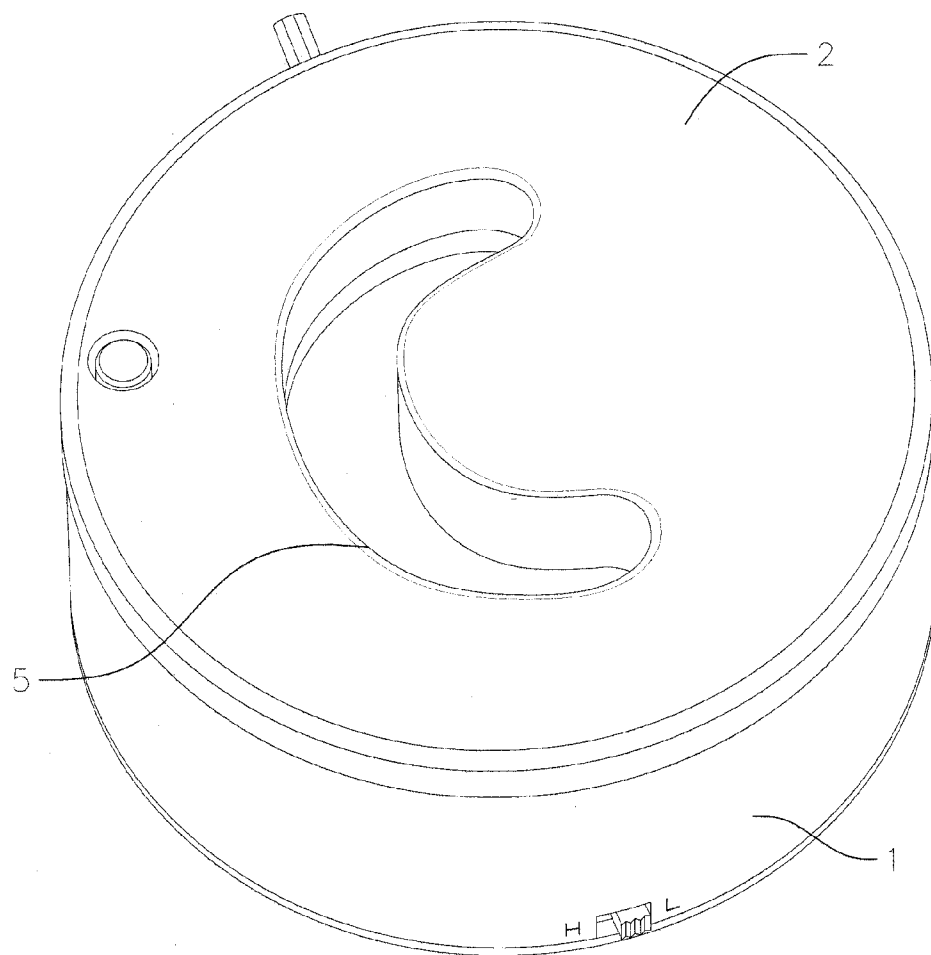


FIG. 13

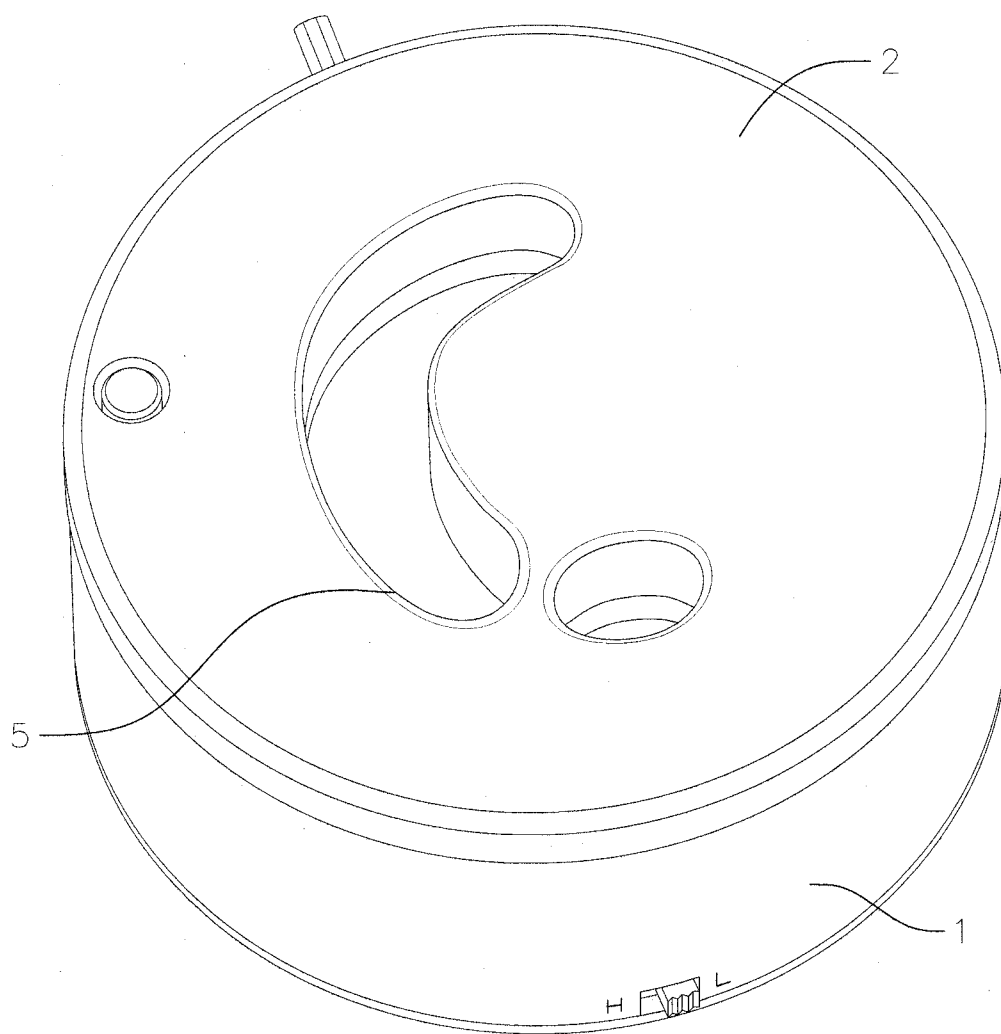
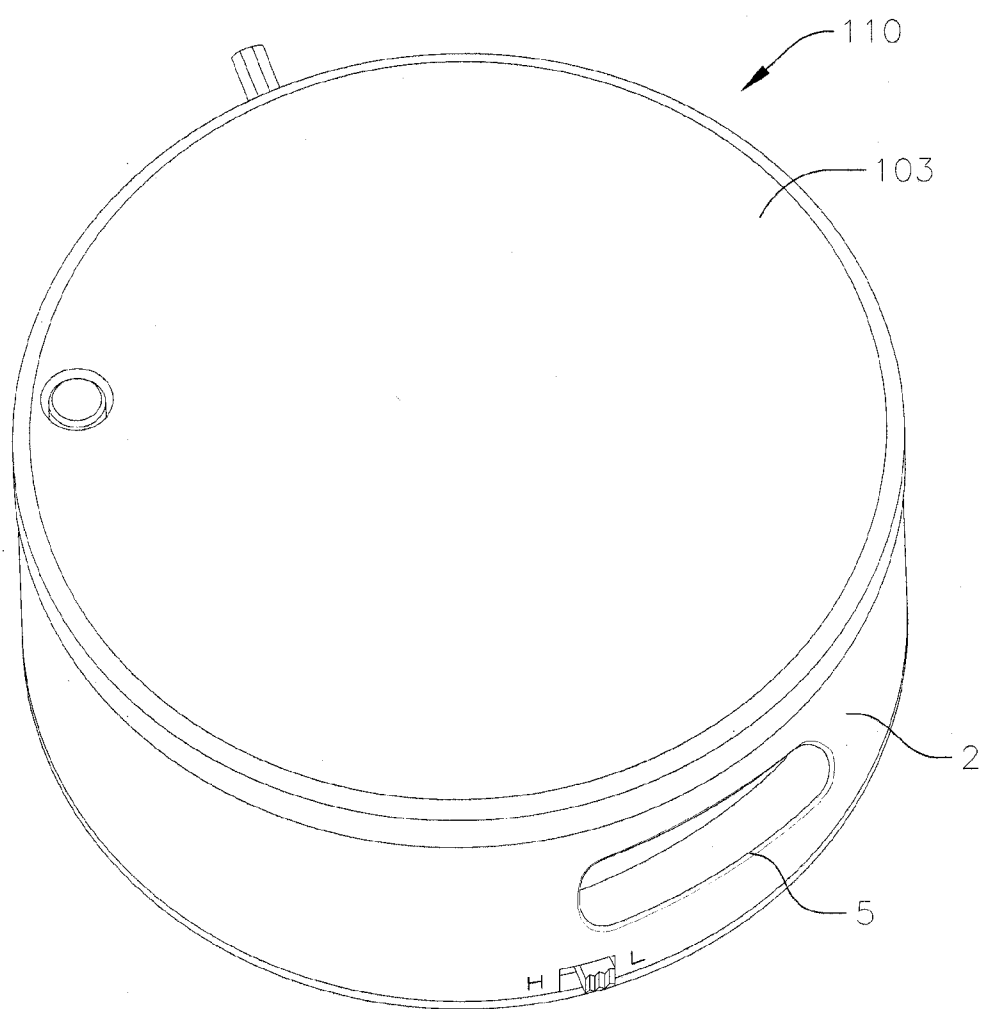


FIG. 14



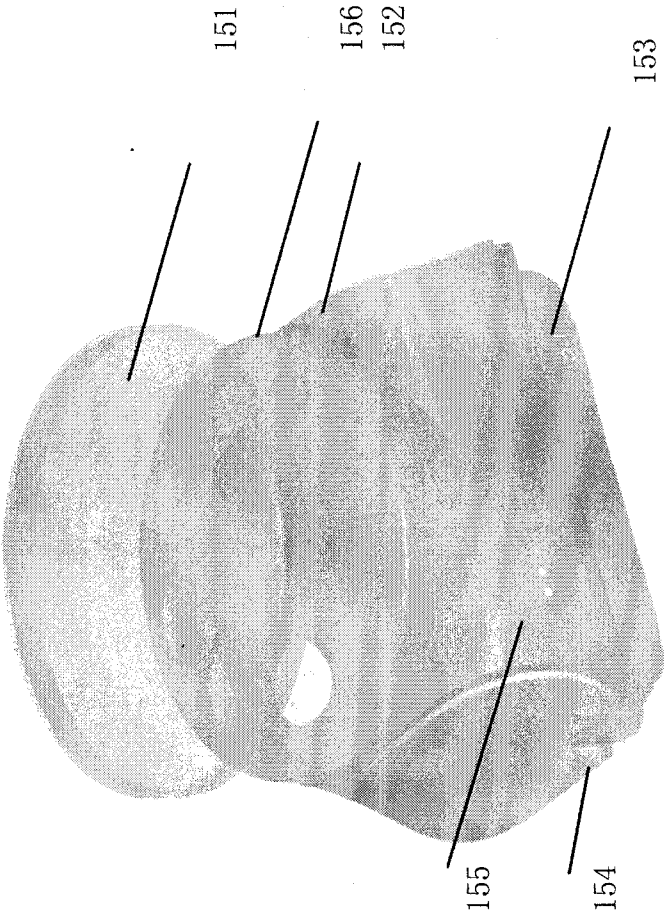


FIG. 15

STEAM GEL/NAIL POLISH REMOVER AND METHOD OF REMOVING GEL/NAIL POLISH

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 14/495,527, filed on Sep. 24, 2014, which claims priority to and the benefit of Chinese Patent Application No. 201420470961.4, filed on Aug. 21, 2014, in the State Intellectual Property Office of the P.R.C., and Chinese Patent Application No. 201410008031.1, filed on Jan. 8, 2014, in the State Intellectual Property Office of the P.R.C., the entire contents of each of which are incorporated herein by reference.

BACKGROUND

[0002] 1. Field

[0003] The following description relates to make-up assisting device, in particular, a steam remover for removing gel polish and/or nail polish, and a method of removing gel polish and/or nail polish.

[0004] 2. Description of the Related Art

[0005] At present, most of the fashionable women utilize a method to remove gel polish and/or nail polish (also generally referred to as “the polish” interchangeably herein after) by soaking in the polish removing solution (i.e., the gel polish removing solution and/or nail polish removing solution). However, the polish removing solution is a chemical product with certain irritation and harm against the skin of hand and foot, and the nails as well. Therefore, the longer the fingers are soaked in the solution, the more harmful it is against the skin of the hand and foot, and nails. To solve this problem, consumers utilize some assisting devices to quicken the removal of artificial nails, gel polish and/or nail polish, such as utilizing a brush or scraper to scratch the soaked nails. This method costs lots of time and features tediousness with the shortcomings including complicated operation, slow in removing the polish, modest effect, and easily causing injury to the hand. Moreover, there is a gel polish and/or nail polish remover bottle with a built-in brush equipped being sold in the current market for removing the gel polish and/or nail polish manually. The gel polish and/or nail polish remover bottle requires one to place its hand into the bottle to soak into the polish removing solution and turn the fingers to have the brush rub against the surface of the nails. The effect of the gel polish and/or nail polish remover bottle is better than the methods mentioned above, but utilizing the gel polish and/or nail polish remover bottle in this structure also features complicated operation, slow in removing the polish, modest effect, and easily causing injury to the hand.

[0006] The applicant of the present invention has applied for a patent with Application No. 201410008031.1 (date of publication is Apr. 23, 2014) and titled “a steam gel/nail polish remover” from the State Intellectual Property Office of P.R.C. The application disclosed a hand cover and foot cover respectively coordinating with the main body of a gel polish and/or nail polish remover and utilized for removing the gel polish and/or nail polish on fingernails and toenails. The working principle is to heat the polish removing solution in the pot liner. The steam generated by heating the solution is utilized to remove the polish on fingernails or toenails. This scheme prevents or substantially prevents fingernails or toenails from directly contacting with the polish removing solu-

tion as what has been done traditionally. It has skillfully achieved the goal of removing the gel polish and/or nail polish by contact of the polish removing solution steam with the polish on nails. However, this scheme is still with shortcomings and not so perfect as below: during inserting of the fingers into the nail remover slots in the hand cover for removing the polish, because the diameter of the slot is needed to be slightly bigger than the size of the finger for easily inserting the finger in, that causes a poor overall air tightness. Therefore, during contacting of the polish removing solution steam with the fingernail, the polish removing solution steam will leak from the gap between the finger and the gel polish and/or nail polish remover slot, and that will lower the efficiency of the polish removing.

SUMMARY

[0007] An aspect according to one or more embodiments of the present invention is directed toward a steam remover for removing gel polish and/or nail polish featuring reasonable and reliable design, simple structure, ease of operation, good air tightness and high efficiency in removing gel polish and/or nail polish.

[0008] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the presented embodiments.

[0009] According to an embodiment of the present invention, a steam remover includes: a main body; and an end cover. The main body includes a shell, a heating unit in the shell, and a pot liner to contain a gel polish removing solution or a nail polish removing solution; and five openings are on a surface of the end cover for five human fingers to push in. An inner surface of the end cover is covered with a silicone rubber sealing ring, the silicone rubber sealing ring including five insertion holes to respectively coordinate with the five openings on the surface of the end cover. When human fingers are pushed into the insertion holes, the fingers will be tightly pressed and fit to the five insertion holes.

[0010] The steam remover may further include a pressing ring to coordinate with the main body to firmly press the silicone rubber sealing ring into the inner surface of the end cover. There are through holes on the pressing ring to well coordinate with the openings on the end cover for human fingers to push in.

[0011] The insertion holes may have a cross-shaped opening structure.

[0012] The insertion holes may have a round-shaped opening, and grooves may be formed along a peripheral of the round-shaped opening and extend outwards.

[0013] The openings may be of a structure of blind holes; there are air inlets at a side wall near a bottom of the openings to allow a polish removing solution steam from the main body to enter in and contact with human fingernails; when the fingers are put inside it, a top end of the fingernails will contact with a bottom of the blind holes, and a surface of the fingernails shall be over the air inlets.

[0014] The heating unit may include a Micro control unit, a heating coil installed along the pot liner for heating, and a heating control switch installed on the shell of the main body.

[0015] The Micro control unit may be connected with an adjusting module to adjust a heating power, a temperature sensing module to detect the temperature of the polish removing solution within the pot liner, a beep prompter module and an LED module.

[0016] According to an embodiment of the present invention, a method of removing at least one of a gel polish or a nail polish includes: inserting fingers in openings of a steam remover; and removing gel polish and/or nail polish on the fingers. The steam remover includes: a main body; and an end cover. The main body includes a shell, a heating unit in the shell, and a pot liner to contain at least one of a gel polish removing solution or a nail polish removing solution; and five openings are on a surface of the end cover for five human fingers to push in. An inner surface of the end cover is covered with a silicone rubber sealing ring, the silicone rubber sealing ring including five insertion holes to respectively coordinate with the five openings on the surface of the end cover. When human fingers are pushed into the insertion holes, the fingers will be tightly pressed and fit to the five insertion holes.

[0017] According to an embodiment of the present invention, an apparatus for removing at least one of a gel polish or a nail polish includes a main body including: a pot liner to contain a polish removing solution; and a vaporizer coupled to the pot liner to generate vapor and/or steam of the polish removing solution; and an end cover coupled with the main body, the end cover having at least one opening for accommodating fingers and/or toes.

[0018] The vaporizer may include at least one of a heater or an electric fan.

[0019] The end cover having at least one opening may be on a top side of the main body.

[0020] The end cover having at least one opening may be on a peripheral side of the main body crossing a top side of the main body.

[0021] The at least one opening may include one opening configured to accommodate all fingers of one hand or all toes of one foot.

[0022] The at least one opening may include two openings configured to accommodate a thumb and a rest of the fingers of one hand or foot respectively.

[0023] The at least one opening may include five openings each configured to accommodate one finger.

[0024] According to an embodiment of the present invention, a method of removing at least one of a gel polish or a nail polish includes: vaporizing a polish removing solution to generate vapor and/or steam of the polish removing solution; and contacting the vapor and/or steam of the polish removing solution with fingers or toes to remove the at least one of the gel polish or the nail polish on the fingers or toes, wherein the fingers or toes are not in contact with the polish removing solution.

[0025] The vaporizing of the polish removing solution may be conducted utilizing a heater or an electric fan.

[0026] The contacting of the steam of the polish removing solution with fingers or toes may be conducted utilizing an end cover having at least one opening.

BRIEF DESCRIPTION OF THE DRAWING

[0027] These and/or other aspects will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings in which:

[0028] FIG. 1 is a schematic illustration of an overall 3D structure of a steam gel polish and/or nail polish remover according to an embodiment of the present invention;

[0029] FIG. 2 is a schematic front view of an end cover according to an embodiment of the present invention;

[0030] FIG. 3 is a top view of the end cover according to an embodiment of the present invention;

[0031] FIG. 4 is a sectional view along the line A-A in FIG. 3;

[0032] FIG. 5 is an exploded view of the end cover according to an embodiment of the present invention;

[0033] FIG. 6 is a sectional view of the steam gel polish and/or nail polish remover according to an embodiment of the present invention;

[0034] FIG. 7 is a magnified view of the part B in FIG. 6, where the finger is for illustration of the inserting act;

[0035] FIG. 8 is a schematic illustration of the structure of the insertion holes on the silicone rubber sealing ring according to an embodiment of the present invention;

[0036] FIG. 9 is a schematic illustration of another structure of the insertion holes on the silicone rubber sealing ring according to an embodiment of the present invention;

[0037] FIG. 10 is a block diagram illustrating the principle of the printed circuit board

[0038] (PCB) peripheral connection module according to an embodiment of the present invention;

[0039] FIG. 11 is a sectional view of the steam gel polish and/or nail polish remover according to an embodiment of the present invention;

[0040] FIG. 12 is a schematic illustration of an overall 3D structure of a steam gel polish and/or nail polish remover according to an embodiment of the present invention;

[0041] FIG. 13 is a schematic illustration of an overall 3D structure of a steam gel polish and/or nail polish remover according to an embodiment of the present invention;

[0042] FIG. 14 is a schematic illustration of an overall 3D structure of a steam gel polish and/or nail polish remover according to an embodiment of the present invention; and

[0043] FIG. 15 is a schematic illustration of an overall 3D structure of a steam gel polish and/or nail polish remover according to an embodiment of the present invention.

[0044] In the above Figures: 1-main body, 101-shell, 102-main body bottom cover, 2-end cover, 3-heater, 301-Micro control unit, 302-heating coil, 303-heating control switch, 4-pot liner, 5-openings, 501-air inlets, 502-bottom of blind holes, 6-silicone rubber sealing ring, 7-insertion holes, 8-pressing ring, 801-through-hole, 9-holder piece, 10-fingers, 11-adjusting module, 12-temperature sensing module, 13-beep prompter module, 14-LED module, 104-vaporizer, 110-main body, 151-top cover, 152-main body, 153-power switch, 154-power port, 155-indicator light, and 156-end cover.

DETAILED DESCRIPTION

[0045] Reference will now be made in more detail to embodiments, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. In this regard, the present embodiments may have different forms and should not be construed as being limited to the descriptions set forth herein. Accordingly, the embodiments are merely described below, by referring to the drawings, to explain aspects of the present invention. The use of “may” when describing embodiments of the present invention refers to “one or more embodiments of the present invention.” As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

[0046] As the invention allows for various changes and numerous embodiments, particular embodiments will be

illustrated in the drawings and described in more detail in the written description. The attached drawings for illustrating example embodiments of the present invention are referred to in order to gain a sufficient understanding of the present invention, the merits thereof, and the objectives accomplished by the implementation of the present invention.

[0047] It will be further understood that the terms “comprises” and/or “comprising” used herein specify the presence of the stated features or components, but do not preclude the presence or addition of one or more other features or components.

[0048] Hereinafter, the present invention will be described in more detail by explaining example embodiments of the invention with reference to the attached drawings. Like reference numerals in the drawings denote like elements. Sizes of components in the drawings may be exaggerated for convenience of explanation. In other words, since sizes and thicknesses of components in the drawings are arbitrarily illustrated for convenience of explanation, the following embodiments are not limited thereto.

[0049] As shown in FIG. 1 and FIG. 2, the steam gel polish and/or nail polish remover (i.e., the steam remover for removing gel polish and/or nail polish utilizing the steam of the gel polish removing solution and/or nail polish removing solution) includes a column-shaped main body 1 and an end cover 2. The end cover 2 and the main body 1 may be connected through a detachable connection or a hinged flip and lock structure. For example, the steam gel polish and/or nail polish remover may adopt a snap joint rotating, chucking and connecting structure. In more detail, the slots or grooves equipped on the end cover 2 match with the fixture blocks around the peripheral of the outer shell of the main body 1 to form a tight lockup connection between the end cover 2 and the main body 1. Meanwhile, at the center of the top of the end cover 2, there is a holder piece 9 equipped for easily turning to the locked position or open position by hand. The holder piece 9 may look like a computer mouse projected and extended upwards from the outer surface of the end cover 2. In addition, for easily identifying the direction to turn to get the locked position or open position by the consumers, there may be an arrow on the top of the end cover to indicate the turning direction.

[0050] As shown in FIG. 3, FIG. 4, FIG. 5, FIG. 8 and FIG. 9, the top surface of the end cover 2 is equipped with five openings 5 corresponding to the five human fingers to be inserted in. The openings 5 may adopt an ellipse cross-section similar to the shape of human fingers. To prevent or substantially prevent the polish removing solution steam from leaking during the operation of the steam gel polish and/or nail polish remover, the inner surface of the end cover 2 is equipped with a silicone rubber sealing ring 6 utilized for avoiding the polish removing solution steam leakage. The silicone rubber sealing ring 6 is equipped with insertion holes 7 correspondingly coordinating (i.e., forms a one-to-one correspondence) with the five openings 5 equipped on the fore-said end cover 2. When inserting the fingers therein, the insertion holes 7 tightly press and fit around the fingers. Meanwhile, to ensure that the silicone rubber sealing ring 6 is effectively and tightly pressed on the inner surface of the end cover 2, a pressing ring 8 is utilized for coordinating with the main body 1 and compressing the silicone rubber sealing ring 6 on the inner surface of the end cover 2. The pressing ring 8 is equipped with through holes 801 corresponding to the openings 5 in the end cover 2 utilized for inserting fingers.

That is, the through holes 801 form a one to one correspondence with the openings 5. Furthermore, to reduce or prevent the silicone rubber sealing ring 6 from poking or scratching the fingers when the consumer is inserting the fingers, as shown in FIG. 8 and

[0051] FIG. 9, insertion holes 7 may adopt a structure with a cross-shaped opening (see FIG. 8) or a round hole-shaped opening (see FIG. 9). Meanwhile, grooves are formed along the peripheral of the round hole-shaped opening and extend outwards (see FIG. 9). For example, four grooves may be formed along two directions perpendicular to each other along the diameter of the round hole to form a shape that is similar to a cross shape. The length and width of each of the grooves may be the same, or may be different. The similar to a cross-shaped opening structure may improve elasticity of the insertion hole 7, and reduce the scratching on the fingers during the insertion.

[0052] As shown in FIG. 6 and FIG. 7, the opening may adopt a blind hole structure (i.e., a hole with an open end and a closed end opposing the open end). Moreover, an air inlet 501 is formed at the side wall near the bottom of the opening 5 utilized for the polish removing solution steam in the main body 1 to enter and contact with the nails. When fingers are inserted therein, the top of the nail contacts with the bottom 502 of the blind hole 5, and the nail surface is located just on the inlet 501. This opening structure will ensure that the bottom part of the opening will provide support to the fingers, when inserting fingers therein, to reduce or prevent fingers from moving (e.g., upwards and/or downwards) during removing of the polish, and avoid causing the polish removing effect to be lowered. Meanwhile, to some extent, it functions as the positioning aid for the inserted fingers.

[0053] As shown in FIG. 6 and FIG. 10, in this embodiment, the main body 1 includes a shell 101, a built-in heating assembly (i.e., a heating unit) 3 in the shell 101 and a pot liner 4 for containing the polish removing solution (e.g., the gel polish removing solution and/or the nail polish removing solution). The heating assembly 3 also includes a Micro control unit 301 (MCU), a heating coil 302 equipped around the pot liner 4 for heating, and a heating control switch 303 equipped in the shell 101. By turning on and off of the heating control switch 303, the operation of the heating coil 302 is controlled through the Micro control unit 301. In addition, the Micro control unit 301 also connects peripherally to an adjusting module 11 utilized for selecting the heating power, a temperature sensing module 12 utilized for detecting the temperature of the polish removing solution in the pot liner 4, a beeper prompter module 13 and an LED module 14. For example, the adjusting module 11 may include a “high temperature level” and a “low temperature level”. Heating range of the low temperature level may be set within 40° C. to 50° C.; and the heating range of the high temperature level may be set within 50° C. to 60° C. When the steam gel polish and/or nail polish remover is in a low temperature level working state, as long as the temperature sensing module 12 detects that the temperature of the polish removing solution is from 40° C. to 50° C., the temperature sensing module 12 will send a detection signal to a processing system, such as a single-chip processing system, in the module of the Micro control unit 301. After that, the processing system of the single-chip sends a signal to have the heating coil stops heating. In the same way, when the steam gel polish and/or nail polish remover is in a high temperature level working state, as long as the temperature sensing module 12 detects that the tem-

perature of the polish removing solution is from 50° C. to 60° C., the processing system of the single-chip sends a signal to control the heating coil to stop heating.

[0054] As shown in FIG. 10, to make the steam gel polish and/or nail polish remover more humanized and smart, and easier to remind the consumers about the working state of the steam gel polish and/or nail polish remover, when the steam gel polish and/or nail polish remover works, the LED indicator of the LED module 14 displays the working state of the device. Meanwhile, when the temperature sensing module 12 detects that the steam gel polish and/or nail polish remover is at a temperature value ranging in the set value of the low temperature or high temperature, the timing control module of MCU starts time counting with a counting range of 5 minutes to 10 minutes. Synchronously, the single-chip processing system controls the motion of the beeper prompter module 13, and the beeper prompter module 13 beeps. In more detail, when the timing control module of MCU starts time counting, the beeper prompter module 13 gives, for example, one beep to remind consumers to insert the fingers; when the timing control module of MCU reaches the set value, the beeper prompter module 13 will beep, for example, continuously in a high speed or frequency, to remind the consumer that the polish removing is finished; in addition, in between the beginning and end period of normal operation, the beeper prompter module 13 beeps in a slow speed or frequency to indicate that the steam gel polish and/or nail polish remover is in a normal working state.

[0055] According to an embodiment of the present invention, a method of removing gel polish and/or nail polish includes: inserting fingers in the openings 5 of the steam gel polish and/or nail polish remover; and removing gel polish and/or nail polish on said fingers. For example, after filling the pot liner 4 with the polish removing solution and attaching the end cover 2 tightly to the main body 1 (for example, through the turning of the holder piece 9), a temperature level is selected through the adjusting module 11. Once a first beep is heard indicating that the temperature is ready, the consumer may insert her/his fingers in the openings 5 until the tip of the finger nail touches the bottom of the openings in the structure of a blind hole. The nail will be facing the air inlet of the openings and the polish will be removed by the steam of the polish removing solution. When a finishing beep is given by the beep prompter module 13, the consumer may withdraw the fingers out of the steam gel polish and/or nail polish remover.

[0056] While a heating assembly 3 has been described to generate the steam of the gel polish and/or nail polish removing solution, the method to generate the steam of the polish removing solution is not limited thereto. For example, instead of a heating coil 302, an electric fan may be utilized to generate the vapor of the gel polish removing solution, and the generated vapor of the gel polish removing solution is utilized to remove the polish from fingers or toes, where the fingers or toes do not contact the gel polish removing solution (i.e., the liquid form of the gel polish removing solution). In this disclosure, the terms “steam” and “vapor” are used interchangeably to refer to the gas phase of the polish removing solution. Further, a steam gel polish and/or nail polish remover may not include two temperature levels, and may include, for example, one or three temperature levels depending on the number of different polish removers utilized.

[0057] FIG. 11 is a sectional view of the steam gel polish and/or nail polish remover according to an embodiment of the

present invention. As shown in FIG. 11, an apparatus for removing gel polish and/or nail polish includes a main body 1 including: a pot liner 4 to contain a polish removing solution; and a vaporizer 104 coupled to the pot liner to generate vapor and/or steam of the polish removing solution. The vaporizer may include a heater or an electric fan.

[0058] Any suitable polish removing solution may be utilized. In one embodiment, the polish removing solution includes acetone, and the temperature of the polish removing solution may be kept at about 55° C., corresponding to the boiling temperature of the polish removing solution. Any suitable amount of the polish removing solution may be utilized, such as, from about 5 ml to about 60 ml. In one embodiment, about 20 ml polish removing solution may be utilized. The tip of the fingers may be kept at a suitable distance away from the heating unit and from the top of the polish removing solution inside the pot liner, so that the temperature of the steam contacting the fingers are at a comfortable temperature range, for example, at about 40° C. or lower.

[0059] The material for the pot liner may not react with the polish removing solution and may be any suitable material. In one embodiment, the pot liner is made of a polymeric material, such as polypropylene.

[0060] The apparatus may further include an end cover coupled with the main body, as shown in FIG. 1. The end cover having at least one opening may be on a top side of the main body as shown in FIG. 1; on a peripheral side of the main body crossing a top side of the main body as shown in FIG. 14; or on various suitable locations. In the embodiment shown in FIG. 14, the end cover 2 having at least one opening is integrated with the side wall of the main body 1, and the main body 1 further includes a top cover 103 to confine the steam of the polish removing solution to be within the main body.

[0061] Instead of the end cover 2 shown in FIG. 1, an end cover may or may not be equipped with the holder piece 9. In addition, instead of silicone rubber sealing ring 6 equipped on the inner surface of the end cover 2, the end cover may not have a silicone rubber sealing ring. In one embodiment, a detachable sleeve may be attached to the fingers/toes or hands/feet of the person before inserting her/his fingers into the openings to create a tight seal between the fingers/toes and the openings to avoid the vapor/steam of the polish removing solution to escape out of the openings. In another embodiment, a glove with the finger tips exposed may be utilized to create a tight seal between the openings and the fingers/toes.

[0062] The end cover may have at least one opening for accommodating fingers and/or toes. For example, the at least one opening may include one opening configured to accommodate all fingers of one hand or all toes of one foot, as shown in FIG. 12; two openings configured to accommodate a thumb and a rest of the fingers of one hand or foot respectively as shown in FIG. 13; or various suitable number of openings. The openings may be shaped differently according to whether they are intended to accommodate fingers of a hand or toes of a foot. In addition, one end cover may have two sets of openings for the left hand/foot and right hand/foot respectively; or two steam removers (apparatuses for removing gel polish or nail polish) may be utilized together to remove the polish from both hands or both feet simultaneously.

[0063] While a column shaped main body has been described, the shape of the main body is not limited thereto. For example, the main body may have a cross-section that is rectangular, triangular, trapezoidal, or any other suitable shapes.

[0064] According to an embodiment of the present invention, a method of removing at least one of a gel polish or a nail polish includes: vaporizing a polish removing solution to generate vapor and/or steam of the polish removing solution; and contacting the vapor and/or steam of the polish removing solution with fingers or toes to remove gel polish and/or nail polish on the fingers or toes, wherein the fingers or toes are not in contact with the polish removing solution.

[0065] The vaporizing of the polish removing solution may be conducted utilizing a heater or an electric fan.

[0066] The contacting of the steam of the polish removing solution with fingers or toes may be conducted utilizing an end cover having at least one opening.

[0067] For example, after filling the pot liner **4** with the polish removing solution and attaching the end cover **2** tightly to the main body **1**, the polish removing solution is vaporized to generate vapor and/or steam of the polish removing solution. The vaporization is conducted through a heater and/or an electric fan, and is initiated through the turning on of a vaporization control switch, for example, a power switch located on a side or a top of the main body. Once the vapor/steam of the polish removing solution reaches a set amount as indicated by a set temperature of the polish removing solution, or the passage of a set amount of time, the consumer may insert her/his fingers in the openings **5** so that the gel polish or nail polish on the fingers comes in contact with the vapor/steam of the polish removing solution and is removed as a result thereof. The nail will be facing the air inlet of the openings and may not be in contact with the polish removing solution (i.e., the liquid form of the polish removing solution). When a set time has passed, the consumer may withdraw the fingers out of the steam gel polish and/or nail polish remover, and the gel polish or nail polish is removed from the fingers.

[0068] Following are examples for illustration of the embodiments of the present invention, however, embodiments of the present invention are not limited thereto.

EXAMPLES

Example 1

A Steam Gel Polish and/or Nail Polish Remover

[0069] FIG. **15** is a schematic illustration of an overall 3D structure of a steam gel polish and/or nail polish remover according to an embodiment of the present invention. The steam gel polish and/or nail polish remover includes a top cover **151**, which may be detachable from the main body **152** of the steam gel polish and/or nail polish remover. The top cover **151** protects the steam gel polish and/or nail polish remover from dusts and contaminates when the apparatus is not in use. Under the top cover **151** is the end cover **156** with five insertion holes. The main body **152** of steam gel polish and/or nail polish remover includes a power switch **153** for turning on/off of the heating power and for selecting a high temperature level or a low temperature level, power port **154** for connection with a DC outlet, and indicator light **155** for indicating the status of the heating unit. The main body may also include a beeper prompter module. The steam gel polish and/or nail polish remover also includes a heating coil, a microcontrol unit, a pot liner for containing the polish removing solution, a silicone rubber sealing ring, etc. The pot liner may include marks such as lines to indicate the desired amount of the polish removing liquid.

Example 2

A Method of Utilizing the Steam Gel Polish and/or Nail Polish Remover

[0070] About 20 ml of an acrylic based gel polish removing solution was first added into the pot liner of the steam gel/nail polish remover apparatus of Example 1. Then the power was turned on to the high temperature level by flipping the power switch to the on position corresponding to the high temperature setting. Here, the light indicating heating was turned on. After about 2.5 minutes (min), the light indicating the steam is ready was turned on and the apparatus gave one beep to indicate that the steam was ready. The user then inserts her fingers into the five insertion holes on the end cover. The heater was on for about 3.5 min and then turned off, where the light indicating heating was simultaneously turned off. The temperature of the steam contacting the user's fingers were comfortably warm to the user. When the temperature of the polish removing solution cooled down to below a preset temperature (e.g., below 50° C.), the heater was turned on and the light indicating heating was turned on again to reheat the polish removing solution. The heating on and off cycle was repeated a number of times. During this process, the apparatus gave two warning beeps at 1 min after the initial one beep indicating that the steam was ready, and 3 beeps at 3 min to remind the user about time, and a long beep at 5 min, at which time the gel/nail polish has been completely removed, the heater was turned off, and the apparatus was turned into the keep-warm stage.

Example 3

A method of Utilizing the Steam Gel Polish and/or Nail Polish Remover

[0071] Substantially the same method was utilized in Example 3 as in Example 2, except that the power was turned on to the low temperature level by flipping the power switch to the on position corresponding to the low temperature setting. Here, after the initial beep indicating that the steam was ready, the apparatus gave two beeps at 6 min, 3 beeps at 8 min, and a long beep at 10 min, indicating the completion of the removal of the gel/nail polish.

[0072] While fingernails have been shown and described, the application of the present invention is not limited thereto. For example, the steam gel polish and/or nail polish remover according to embodiments of the present invention may be utilized to remove gel polish and/or nail polish from toenails. While gel polish and nail polish have been described in example embodiments, it will be understood by those of ordinary skill in the art that the steam gel polish and/or nail polish remover according to embodiments of the present invention may be utilized to remove other kinds of polish from fingernails and/or toenails.

[0073] It should be understood that the example embodiments described therein should be considered in a descriptive sense only and not for purposes of limitation. Descriptions of features or aspects within each embodiment should typically be considered as available for other similar features or aspects in other embodiments.

[0074] While one or more embodiments of the present invention have been described with reference to the figures, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein

without departing from the spirit and scope of the present invention as defined by the following claims, and equivalents thereof.

What is claimed is:

1. An apparatus for removing at least one of a gel polish or a nail polish, the apparatus comprising:

a main body comprising:

a pot liner to contain a polish removing solution; and
a vaporizer coupled to the pot liner to generate vapor and/or steam of the polish removing solution; and
an end cover coupled with the main body, the end cover having at least one opening for accommodating fingers and/or toes.

2. The apparatus as set forth in claim 1, wherein the vaporizer comprises at least one of a heater or an electric fan.

3. The apparatus as set forth in claim 1, wherein the end cover having at least one opening is on a top side of the main body.

4. The apparatus as set forth in claim 1, wherein the end cover having at least one opening is on a peripheral side of the main body crossing a top side of the main body.

5. The apparatus as set forth in claim 1, wherein the at least one opening comprises one opening configured to accommodate all fingers of one hand or all toes of one foot.

6. The apparatus as set forth in claim 1, wherein the at least one opening comprises two openings configured to accommodate a thumb and a rest of the fingers of one hand or foot respectively.

7. The apparatus as set forth in claim 1, wherein the at least one opening comprises five openings each configured to accommodate one finger.

8. A method of removing at least one of a gel polish or a nail polish, the method comprising:

vaporizing a polish removing solution to generate vapor and/or steam of the polish removing solution;
contacting the vapor and/or steam of the polish removing solution with fingers or toes to remove the at least one of the gel polish or the nail polish on the fingers or toes, wherein the fingers or toes are not in contact with the polish removing solution.

9. The method of claim 8, wherein the vaporizing of the polish removing solution is conducted utilizing a heater or an electric fan.

10. The method of claim 8, wherein the contacting of the steam of the polish removing solution with fingers or toes is conducted utilizing an end cover having at least one opening.

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