A bottle adapted to be operatively interlitted into a plurality of different housings for liquid vaporization devices. The bottle is a modification of the bottle disclosed in U.S. Pat. No. 6,659,301 that interlitted to a first and second vaporization device and has a circular recess formed in its wick holder so as to receive a downwardly extending circular ring of a third vaporization device to thus enable the new bottle to be interlittable to that third vaporization device. At the same time, the modifications have dimensionally retained an annular collar that surrounds the neck of the bottle which enables the bottle to still be interlitted into the first vaporization device as well as a fourth vaporization device manufactured by the present assignee. As such, the same bottle is operatively interlitted into a first, second, third and fourth vaporization devices, all of differing dimensions and of at least three different manufacturers.
Bottle for Liquid Vaporization Device

Field of the Invention

[0001] The present invention relates generally to liquid vaporization devices and, more particularly, to a device that vaporizes a liquid perfume and to a specialized bottle that can be used therewith.

Background of the Invention

[0002] In U.S. Pat. No. 6,659,301 of Fellowes et al., there is disclosed a specialized bottle that has been designed to interfit into a plurality of different housings for liquid vaporization devices. As described in that patent, a bottle was specially designed to interfit specifically with a Wizard and a Glade vaporization device, respectively hereinafter referred to as first and second vaporization devices, with the consequent advantages of having a single bottle of vaporizable liquid that could be used with either commercial liquid vaporization device. The advantages recited in that patent include the ability of a consumer to purchase a single replacement bottle for use with a home vaporizer and not need to know which vaporizer was in use in the home. Accordingly, the consumer was not faced with the problem of having purchased an incompatible replacement bottle for the vaporizer being used in that home.

[0003] Recently changes have been made to the second vaporization device resulting in a third vaporization device. Those changes have thwarted the versatility of the bottle disclosed in the '301 patent to the extent that certain modifications to the second vaporization device resulted in incompatibility of that bottle to interfit and be locked into an operative position within the third vaporization device.

[0004] In particular, the third vaporization device includes an extruded circular ring that depends downwardly from the housing of the third vaporization device and abuts against the distal upward end of the bottle of the '301 patent, thereby preventing that bottle from being insertable vertically upwardly into the third vaporization device sufficiently to allow the outwardly extending projections formed on the bottle to snap into the alignment holes in the housing of the third vaporization device.

[0005] Therefore, the addition of the extruded circular ring that has been incorporated into the third vaporization device creates a problem in operatively interfitting the bottle of the aforementioned '301 patent into the third vaporization device and be locked into that position.

[0006] As such, it would be advantageous to have a modification to the bottle of the '301 patent to create a modified new bottle that can be interfitted into the third vaporization device and yet also still be interfittable into the second vaporization device. In addition, it would also be advantageous for the modified bottle to still be interfittable to the first vaporization device so as to be usable with those vaporization devices already in the hands of consumers.

[0007] In addition there is a fourth vaporization device currently on the market and which is also commercially available as supplied by Waldwick Plastics, Inc. the assignee of the present patent application. Accordingly, it would be desirable to have a single bottle that could be operatively interfitted to all of the aforementioned commercial vaporization devices, that is, the first, second, third and fourth vaporization devices.

Summary of the Invention

[0008] The present invention relates to a liquid vaporization bottle that is specially designed so as to operatively interfit into a plurality of commercially available vaporization devices and, in particular, operatively fit into the first, second, third and fourth devices.

[0009] Accordingly, the bottle of the present invention has overcome the lack of compatibility with the third vaporization device while still maintaining the ability to operatively interfit with the first and second vaporization devices by a redesign of the bottle. In the present invention, accordingly, certain of the features of the bottle that have been shown and described in the aforementioned '301 patent have been retained, that is, the bottle still has certain locking features that enable the bottle to be locked into its operative positions to both the first and second vaporization devices. Those locking features include at least one projection, and preferably a plurality of projections, extending outwardly from the bottle and which are located and dimensioned to fit through corresponding openings formed in the second vaporization device in order to retain the bottle to that device.

[0010] As the other locking feature, the present bottle also has an annular collar that surrounds the neck of the bottle in order to releasable affix the present bottle to the first vaporization device so that such locking devices enable the present bottle, in a manner similar to that of the bottle of the '301 patent, to operatively be locked into position to both the first and second vaporization devices.

[0011] As a further feature however there is also a means that allows the present bottle to be interfitted to and locked to the third vaporization device having the downwardly extending circular ring and which prevents the bottle of the '301 patent from being affixed and locked to the third vaporization device. The feature relates to a modification of the '301 bottle such that the neck of the bottle has been widened and a circular recess is formed in the wick holder that is affixed within that neck to hold the wick in its operative position.

[0012] As such, when the present bottle is fitted into the third vaporization device, the downwardly extending circular ring on that housing of the third vaporization device fits into the circular recess due to the predetermined dimensions and location thereof on the bottle of the present invention and therefore the inventive bottle can fit up into the third vaporization device sufficiently to allow the outwardly extending projections on the bottle to extend through the openings in the third vaporization device to lock the new bottle into its operative position.

[0013] In addition, the bottle of the present invention is still compatible and operative with the first and second vaporization device and also can be interfitted into the fourth vaporization device such that the present bottle can be used with the first, second, third and fourth vaporization devices, all of which are commercially available and in the homes of consumers.

[0014] These and other features and advantages of the present invention will become more readily apparent during the following detailed description taken in conjunction with the drawings herein.
BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is a schematic side view of the second vaporization device with the bottle of the Fellows et al. '301 patent affixed thereto;

[0016] FIG. 2 is a schematic view of the third vaporization device with the bottle of the Fellows et al. '301 patent;

[0017] FIG. 3 is a schematic view of the third vaporization device with the bottle of the present invention affixed thereto;

[0018] FIG. 4A and FIG. 4B are schematic views of the prior bottle and the new bottle, respectively, interfitted to the first vaporization device; and

[0019] FIG. 5 is a schematic view of the bottle of the present invention interfitted into the fourth vaporization device.

DETAILED DESCRIPTION OF THE INVENTION

[0020] Referring now to FIG. 1, there is shown a schematic view of the second vaporization device 10, having the prior commercial bottle 12 made in accordance with U.S. Pat. No. 6,659,301 of Fellows et al. As stated, the second vaporization device is the prior Glade vaporization device. As such, the combination of the second vaporization device with the prior bottle 12 is shown and described in more detail in the aforementioned Fellows et al U.S. patent and the disclosure thereof is hereby incorporated herein in its entirety by reference.

[0021] Briefly, however, as can be seen, the second vaporization device 10 includes a housing 14 containing an annular heater 16 having a heater opening 18 formed therein. As is conventional, the annular heater 16 is powered by an electrical source that is provided when the second vaporization device 10 is plugged into a standard wall outlet. The housing 14 also has a pair of openings 20 (only one of which is shown) that are oppositely disposed and which are used to lock the prior bottle 12 into its operative position to the second vaporization device 10.

[0022] The bottle 12 can be seen to be interfitted to and locked into its operative position within the housing 14 of the second vaporization device 10. When so positioned, two outwardly extending projections 22 located on opposite sides of the prior bottle 12 (again, only one of which is shown in FIG. 1) enter into and are locked into the pair of openings 20 in the housing 14. When so locked into position, the wick 24 which is held within a wick holder 26 extends upwardly into the housing 14 so that it is automatically located within the heater opening 18 of the annular heater 16 such that, upon energization of the annular heater 16, the wick 24 is heated to vaporize the liquid that saturates the wick 24 from a reservoir of liquid contained within the bottle 12. The wick holder 26 is firmly fitted within a mouth that is internally formed in the neck 28 of the bottle 12.

[0023] The foregoing explanation of FIG. 1 describes the commercial version of the second vaporization device 10 with the prior commercial bottle 12 and is important to recognize the relationship between the location of the prior bottle 12 and the housing 14 of that second vaporization device 10, that is, when the prior bottle 12 has been properly locked into its operative position to the housing 14, the wick 24 is located within the heated space provided by the annular heater 16 and an upper surface 30 of the wick holder 26 that is sealingly fitted into the mouth of the prior bottle 12 abuts against a lower housing surface 32 of the second vaporization device 10.

[0024] Turning now to FIG. 2, there is shown a schematic view of the third vaporization device 34, that is the new Glade vaporization device and which is more recently introduced commercially than the Glade second vaporization device and showing the prior commercial bottle 12 therewith. In FIG. 2, there can be seen an extruded circular ring 36 that extends downwardly from the lower housing surface 38 of the third vaporization device 34. As such, with the prior commercial bottle 12, the prior commercial bottle 12 is prevented from moving vertically upwardly into the housing 40 of the third vaporization device 34 sufficiently to allow the outwardly extending projections 22 from entering the openings 42 of the third vaporization device 34 and therefore the prior commercial bottle 12 cannot be locked into the housing 40 of the third vaporization device 34. The reason for the inability of introducing the prior commercial bottle 12 fully into the housing 40 is due to the upper surface 30 of the wick holder 26 that encounters the circular ring 36, thereby preventing the prior commercial bottle 12 from moving upwardly a sufficient distance to lock into position to the third vaporization device 34.

[0025] Turning now to FIG. 3, there is shown a schematic view of the third vaporization device 34 having affixed thereto, a new bottle 44 constructed in accordance with the present invention. Thus, the new bottle 44 has a neck 46 having an internal mouth 48 formed therein, shown as the dimension MINT, that has been increased from about 10.5 mm. from the prior commercial bottle 12 as shown in FIGS. 1 and 2 to about 14.5 mm. in order to accommodate a larger diameter wick holder 50. The external diameter of the neck 46 has, accordingly, been increased from about 16 mm. to about 20 mm. Thus, with the wider diameter wick holder 50, there is formed in the wick holder 50 a circular recess 52 that receives the circular ring 36 as the new bottle 44 is inserted into its operative position in the housing 40. With the circular ring 36 entering the circular recess 52, as can be seen, the upper surface 54 of the wick holder 50 of new bottle 44 can abut against the lower housing surface 38 and which enables the outwardly extending projections 56 to enter into the openings 42 to lock the new bottle 44 into the third vaporization device 34.

[0026] The location and depth of the circular recess 52 is, of course, predetermined to receive the circular ring 36 and the depth of the circular recess 52 is designed to be about 7.5 mm. with the outer diameter about 13 mm. and with the inner diameter to be about 10 mm. With these dimensions, the circular ring 36 of the third vaporization device 34 will fit within the circular recess 52 sufficiently to enable the new bottle 44 to be locked into its operative position within the housing 40 of the new vaporization device 34.

[0027] Turning to FIG. 4A, there is shown the prior commercial bottle 12 operatively affixed to the first vaporization device 58, known as the Wizard vaporization device, and, as can be seen, the first vaporization device 58 has a housing 60 including an annular heater 64 that surrounds the wick 24 to provide heat for vaporizing the liquid in the prior bottle 12. The housing 60 also includes downwardly extend-
ing latches 62 that grip the bottle 12 underneath an annular collar 66 formed in the neck 28 of the prior bottle 12. The interaction between the downwardly extending latches 64 thus holds the prior bottle 12 in its operative position as shown in FIG. 4A.

[0028] Turning finally to FIG. 4B, there is shown the new bottle 44 operatively affixed to the first vaporization device 58 and, as can be seen, even though the external diameter of the neck 46 has been increased from about 16 mm. to about 20 mm., the dimensions of the annular collar 68 have not changed so that the annular collar 68 can still interfit with the downwardly extending latches 64 to hold the new bottle 44 locked into position to the first vaporization device 58.

[0029] As such while the new bottle 44 of the present invention has been modified so as to fittingly engage with the housing 40 of the third vaporization device 34 (FIG. 3), it still is adapted to interfit with and be locked to the first vaporization device 58 in the normal manner and therefore is interfittable to all of the first vaporization device 58, the second vaporization device 10 and the third vaporization device 34.

[0030] Turning now to FIG. 5, there is shown a schematic view of yet another vaporization device and this one is a commercially available vaporization device of Waldwick Plastic, Inc and herein referred to as the fourth vaporization device 70 and having affixed thereto a new bottle 44 of the present invention. The fourth vaporization device 70 has a housing 72 including an annular heater 74 that surrounds the wick 24 to provide heat for vaporizing the liquid in the new bottle 44. The housing 72 also includes downwardly extending latches 76 that grip the bottle 44 underneath the annular collar 68 formed in new bottle 44. The interaction between the downwardly extending latches 76 thus holds the new bottle 44 in its operative position as shown in FIG. 5.

[0031] As such, the new bottle 44 of the present invention can be seen to operatively interfit with the fourth vaporization device 70 as well as interfit with the first vaporization device 58, the second vaporization device 10 and the third vaporization device 34. Thus, the same new bottle 44 is designed to interfit with at least four commercial vaporizers having differing dimensions and produced by at least three different manufacturers.

[0032] Those skilled in the art will readily recognize numerous adaptations and modifications which can be made to the bottle of the present invention which will result in an improved bottle and method of using the same, yet all of which will fall within the scope and spirit of the present invention as defined in the following claims. Accordingly, the invention is to be limited only by the following claims and their equivalents.

What is claimed is:

1. A method of interfitting a bottle into any one of at least two different housings in liquid vaporization devices, one of the liquid vaporization devices having an opening and a downwardly extending circular ring and the other having a releasable securing means, said method comprising the steps of:

- providing a bottle having an outlet opening and an external surface having at least one projection extending outwardly therefrom, the bottle having an annular collar surrounding the outlet opening, and a circular recess coaxial with the outlet opening,
- inserting the bottle into the one of the housings of the liquid vaporization devices to either interlock the at least one projection into the opening while inserting the downwardly extending circular ring into the circular recess or interlocking the collar into the releasable securing means to affix the bottle to a liquid vaporization device.

2. A method of interfitting a bottle into any one of at least two different housings in liquid vaporization device wherein said step of providing a bottle comprises providing a bottle with a circular recess having an internal diameter of about 10 mm.

3. A method of interfitting a bottle into any one of at least two different housings in liquid vaporization device wherein said step of providing a bottle comprises providing a bottle with a circular recess having an outer diameter of at least about 13 mm.

4. A bottle for use with at least two differently dimensioned liquid vaporization devices, each of the vaporization devices having a heating chamber for receiving a wick containing a material to be vaporized, the bottle having a neck forming an opening, a set of opposed surfaces and a wick holder affixed to and extending upwardly through the opening and enclosing the wick, the wick holder having an annular recess being dimensioned to receive a circular ring formed in one of the vaporization devices to allow the bottle to be interfitted to that vaporization device, and wherein the bottle includes a fixation means to retain the bottle to all of the at least two vaporization devices and wherein the fixation means includes both an annular collar surrounding the neck of the bottle and at least one projection extending outwardly from the set of opposed surfaces wherein the retaining of the bottle by either the annular collar or the at least one projection to all of the at least two vaporization devices positions the wick of the bottle within the heating chamber of all of the at least two vaporization devices.

5. A bottle as defined in claim 4 wherein said circular recess in said wick holder has an inner diameter of about 10 mm.

6. A bottle as defined in claim 4 wherein said circular recess in said wick holder has an inner diameter of at least about 13 mm.

7. A liquid vaporization device having a bottle removably affixed thereto, said liquid vaporization device having one of a receiving structure and a downwardly extending circular ring or a releasable securing means, a bottle having an outlet opening and a recess formed therein and adapted to interfit within the liquid vaporization device, the bottle having a projection extending outwardly therefrom and an annular collar surrounding the outlet opening, the bottle being affixable to the liquid vaporization device by either, the annular collar being secured to the releasable securing means or the projection cooperatively interfitting within the receiving structure in the liquid vaporization device and with the circular ring interfitting within the recess formed in the bottle.
8. The liquid vaporization device as defined in claim 3 wherein said recess is a circular recess.

9. The liquid vaporization device of claim 8 wherein the said circular recess has an internal diameter of about 10 mm.

10. The liquid vaporization device of claim 8 wherein the said circular recess has an outer diameter of at least about 13 mm.

11. The liquid vaporization device as defined in claim 8 wherein the releasable securing means comprises at least one latch that extends from the liquid vaporization device.

12. The liquid vaporization device as defined in claim 11 wherein the releasable securing means comprises as pair of latches that extend downwardly in the liquid vaporization device to grasp the annular collar.

13. A bottle adapted to be releasably interfitted with at least first and second vaporization devices, each of the first and second vaporization devices having a housing differently dimensioned and adapted to receive a bottle containing a liquid to be vaporized, the dimensions of said bottle being predetermined such that the bottle is adapted to operatively interfitt with each of the differently dimensioned housings, the bottle having a projection extending outwardly therefrom and having outlet opening, a wick holder affixed within said outlet opening, said wick holder having a circular recess concentric with said outlet opening, said wick holder having a circular recess extending upwardly from said outlet opening and containing a wick, the first vaporization device having an opening and having a circular ring extending downwardly, the second vaporization device having a releasable securing means, the bottle being affixable to the liquid vaporization device by either, the annular collar being secured to the releasable securing means of the second vaporization device or the projection of the first vaporization device cooperatively interfitt with the opening in the first receiving structure wherein the circular ring of the first vaporization device interfitts into the circular recess of the wick holder.

14. The bottle as defined in claim 13 wherein each of the first and second vaporization devices has a heating chamber for receiving the wick containing a material to be vaporized, the bottle being dimensioned to interfitt to the first and second vaporization devices to operatively locate the wick within the heating chamber of the first and second vaporization devices.

15. The bottle as defined in claim 13 wherein said circular recess has an internal diameter of about 10 mm.

16. The bottle as defined in claim 13 wherein said circular recess has an outer diameter of about 13 mm.

17. The bottle as defined in claim 8 wherein said circular recess has a depth of about 7.5 mm.

18. A bottle adapted to be releasably interfitted with at least two liquid vaporization devices, each vaporization device having a housing differently dimensioned and adapted to receive a bottle containing a liquid to be vaporized, one of the at least two vaporization devices having a circular ring extending downwardly therefrom and having an opening and another vaporization device having a releasable securing means, the bottle having a neck forming an outlet opening extending therefrom and having a wick holder affixed within said opening enclosing a wick therein, said wick holder having a recess formed therein, the bottle also having a projection extending outwardly therefrom and an annular collar surrounding the neck, the dimensions of the bottle and the location of the outlet opening being predetermined such that the bottle is adapted to operatively interfitt with each of the differently dimensioned housings with either the projection interfitt through the opening in the housing and the recess in the wick holder receiving the circular ring or the annular collar interfitt to the releasable securing means.

19. The bottle as defined in claim 18 wherein said circular recess has an internal diameter of about 10 mm.

20. The bottle as defined in claim 18 wherein said circular recess has an outer diameter of at least about 13 mm.

21. A bottle adapted to be releasably interfitted with a first, second, third and fourth liquid vaporization device, each of the first, second, third and fourth liquid vaporization devices having a locking system and a different housing adapted to receive a bottle containing a liquid to be vaporized, the dimensions of said bottle being predetermined such that the bottle is adapted to operatively interfitt with each of the different housings, the bottle having a locking feature formed thereon and having outlet opening, a wick extending upwardly from said outlet opening, the bottle being affixable to any of the first, second, third and fourth liquid vaporization devices with the locking feature cooperatively interfitt with a locking system of the first, second, third and fourth liquid vaporization device.