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ATOMIZATION JET ASSEMBLY**CROSS-REFERENCE TO RELATED APPLICATIONS**

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FEDERALLY SPONSORED RESEARCH

Not applicable

SEQUENCE LISTING OR PROGRAM

Not applicable

BACKGROUND OF THE INVENTION**1. Field of Invention**

This invention relates to aromatherapy essential oil diffusers, specifically to an improved atomization jet assembly for essential oil diffuser wells.

BACKGROUND OF THE INVENTION

A rectangular essential oil diffuser well previously sold by Young Living Essential Oils Corporation, had some disadvantages and design problems. The jet cap would fall off during handling or cleaning. Customers would often loose the cap and have to order a replacement. The cap was a small object that became a great inconvenience to customers.

Two separate holes were drilled in the diffuser well body from opposite ends (**94** and **98**). The first hole **98** created an air passage through the center of a barb **99** and up through the center of the jet **95** (FIG. P7). A second hole **93** was drilled to connect oil well hole **91** to jet well hole **92** which allowed oil to pass from the oil well hole **91** to the jet well hole **92**. An extra hole **93** required a second machining operation which increased manufacturing costs and had to be plugged and re-surfaced to hide plug **94** (FIG. 14). Plug **94** often showed up as "unattractive" after anodization due to color variation.

This design also spit and sputtered making undesirable noise. I found it was the distance between the air jet orifice **95** (FIG. P1) and the small hole in cap **97** (FIG. P1). This distance was created by a drill angle inside the cap **96** (FIG. P1) which often interrupted the venture action (Vacuum) because a portion of the air blew underneath the cap **96**. This is largely what caused the sputtering and spiting of oils, operational inconsistencies and unpredictable output.

I found machining tolerances in manufacturing also effected performance of atomizing jet FIGS. P5 to P8. Too large of hole in the cap **97** affected the amount of low pressure created by venture action (Vacuum). Improper sizing of air jet orifice **95** would effect air flow and its ability to create venture action. Without proper air velocity delivered through air jet orifice **95** and incorrectly sized hole in cap **97** the assembly would spit and sputter large droplets of oil The gap, or distance between hole **95** and hole **97** becomes critical for breaking down (atomizing) oil particles efficiently,

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Management and employees of Young Living Essential oils corporation knew for years that the rectangular essential oil diffuser well (FIGS. P1 to P14) needed some improvement, but did not have acceptable options until now.

BACKGROUND OF INVENTION**2. Objects and Advantages**

Having seen the manufacturing process of the prior art and evaluating the same consumer inconveniences for myself, I decided to design a new style of essential oil diffuser well, atomization jet, cap and glass diffuser with more attractive shapes and superior function. My system presents and overall feminine appeal which provides a better marketing edge over the prior art. The rectangular shaped prior art, diffuser well, atomization jet and glass diffuser are no longer manufactured. My jet and cap assembly was specifically designed to solve the disadvantages of the prior art in the following areas:

1. A Teflon rod was added which provides a dual function:

A- It creates tension between the jet and cap. The cap can be easily removed, but does not fall off, even if the diffuser well is turned upside down or shaken.

B- The lower end of the Teflon rod sticks down into the bottom of the jet slot and oil supply hole. This helps draw the oil from the lowest point of the diffuser jet well to the top of the capillary break.

2. A single hole drilled at 1 degree angle performs three functions.

A-It helps drain the oil from the oil well hole to the jet well hole.

B- It connects the oil well hole to the jet well hole. Drilling only one hole eliminated the unattractive plug and reduced extra machining operations.

C- It directs air to the jet. The jet acts as a plug that separates the air inlet from the oil reservoir. The jet seals the air cavity from the oil cavity.

3. Spitting, sputtering and noise were reduced by a consistent special relationship between the jet and cap. Machining tolerances held between the jet ball and the inside radius of the cap is critical. A maintained distance ensured consistent venture action (vacuum) created by the air velocity coming out of the jet orifice. A countersink angle on the cap hole aided the natural distribution of air/oil molecules in a fan shaped pattern. The net result of these design changes are improved performance and reliability of atomization.

Further objects and advantages of my invention will become apparent from a consideration of the drawings and ensuing description. Advantages covering the aesthetic appeal and better salability are covered in other design patents sited above.

SUMMARY

In accordance with the present invention, a Teflon rod, jet and cap comprises the entire **3** component assembly. The jet acts as a plug to divide the air supply from the oil supply. A carefully engineered gap tolerance between the jet and cap create dependable atomization. This assembly must then be pressed into a diffuser well to complete a functional system that supplies air and oil to the jet for atomization.

DRAWING**FIGURES**

FIG. 1 illustrates an assembly view of my 3 component atomization jet. A Teflon rod **70** must be inserted into slot **36**