MALLOY & MALLOY, P.L.

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

English Language Division

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

FLUID DISPERSION ASSEMBLY

the specification of which

(check one)

__X__ is attached hereto

_____ was filed on _____ as

Application Serial No. _____,

and was amended on and _____.
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations '1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, '119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate have a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under Title 35, United States Code, '120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United application in the manner provided by the first paragraph of Title 35, United States Code, '112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, '1.56(a) which occurred between the filing date of the prior application and the national PCT International filing date of this application:

Aroma360 - Exhibit 1006

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made of information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Practitioners associated with the Customer Number: **04219**, namely:

John Cyril Malloy - Reg. No. 19,531
James E. Wetterling - Reg. No. 31,440
Jennie S. Malloy - Reg. No. 37,670
Peter A. Matos - Reg. No. 37,884
Gene A. Lang - Reg. No. 64,302
John Fulton, Jr. - Reg. No. 46,716
Benjamin M. Hanrahan - Reg. No. 60,850
Jason A. LaCosse - Reg. No. 61,103
Jessica M. Hauth - Reg. No. 67,445

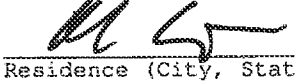
Send correspondence to the address associated with Customer Number: **04219**, namely:

MALLOY & MALLOY, P.L.
2800 S.W. Third Avenue
Historic Coral Way
Miami, Florida 33129

Direct telephone calls to: (305) 858-8000

Full name of sole or first inventor
MARC LEVY

Inventor's signature



Date
6-28-12

Residence (City, State)
Miami, Florida

Citizenship (Country)
US

Post Office Address (complete mailing address)
9716 SW 92 Terrace

Miami, Florida 33176

Full name of second joint inventor, if any
CRAIG HUCK

Inventor's signature

Date

Residence (City, State)
Waterford, Pennsylvania

Citizenship (Country)

Post Office Address (complete mailing address)
493 Hull Road

Waterford, Pennsylvania 16411

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made of information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Practitioners associated with the Customer Number: **04219**, namely:

John Cyril Malloy - Reg. No. 19,531
James E. Wetterling - Reg. No. 31,440
Jennie S. Malloy - Reg. No. 37,670
Peter A. Matos - Reg. No. 37,884
Gene A. Lang - Reg. No. 64,302
John Fulton, Jr. - Reg. No. 46,716
Benjamin M. Hanrahan - Reg. No. 60,850
Jason A. LaCosse - Reg. No. 61,103
Jessica M. Hauth - Reg. No. 67,445

Send correspondence to the address associated with Customer Number: **04219**, namely:

MALLOY & MALLOY, P.L.
2800 S.W. Third Avenue
Historic Coral Way
Miami, Florida 33129

Direct telephone calls to: (305) 858-8000

Full name of sole or first inventor
MARC LEVY

Inventor's signature _____ Date _____

Residence (City, State)
Miami, Florida

Citizenship (Country)

Post Office Address (complete mailing address)
9716 SW 92 Terrace

Miami, Florida 33176

Full name of second joint inventor, if any
CRAIG HUCK

Inventor's signature _____ Date 8/16/2012

Residence (City, State)
Waterford, Pennsylvania

Citizenship (Country)
US

Post Office Address (complete mailing address)
493 Hull Road

Waterford, Pennsylvania 16411

Full name of third inventor, if any

STEVEN SEMOFF

Inventor's signature

Date

7-26-12

Residence (City, State)

New City, New York

Citizenship (Country)

US

Post Office Address (complete mailing address)

4 Evan Drive

New City, New York 10956

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	FLUID DISPERSION ASSEMBLY
First Named Inventor/Applicant Name:	Marc Levy
Filer:	John Fulton/Irma Gomez
Attorney Docket Number:	1.106.12

Filed as Small Entity

Provisional Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Provisional Application filing fee	2005	1	125	125
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**125**

Electronic Acknowledgement Receipt

EFS ID:	13617467
Application Number:	61694500
International Application Number:	
Confirmation Number:	8663
Title of Invention:	FLUID DISPERSION ASSEMBLY
First Named Inventor/Applicant Name:	Marc Levy
Customer Number:	4219
Filer:	John Fulton/Irma Gomez
Filer Authorized By:	John Fulton
Attorney Docket Number:	1.106.12
Receipt Date:	29-AUG-2012
Filing Date:	
Time Stamp:	15:47:41
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$125
RAM confirmation Number	2444
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Miscellaneous Incoming Letter	Cert_EFS_Transmittal_1106.pdf	10521 89d15dea7cd61f6cd3dcbe6fd21aa7a727967a9d	no	1
Warnings:					
Information:					
2	Provisional Cover Sheet (SB16)	Provisional_Transmittal_Cover_Sheet_1106.pdf	112577 6125c708fb238119ba7dd74613f8a35e86467bff	no	2
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
This is not a USPTO supplied Provisional Cover Sheet SB16 form.					
Information:					
3	Drawings-only black and white line drawings	Drawings_Filed_1106.pdf	125359 0001dc334d260b3b5ed5890f6d7377e7ed618489	no	4
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
4		Provisional_Patent_Application_Filed_1106.pdf	77236 fd49098e5c8a6df514c0b1070719c040d2a8cfe6	yes	21

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	15
Claims	16	20
Abstract	21	21

Warnings:					
Information:					
5	Power of Attorney	Declaration_and_Power_of_Attorney_1106.pdf	191088 02d9a0cf0ad2c881e3f9ed5bdb81a974c638f9d4	no	4
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	29469 ad2e5cb16fe4fefc89d3f08d823ff1a12d2be68e	no	2
Warnings:					

Information:	
Total Files Size (in bytes):	546250

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Marc Levy, Craig Huck and Steven Semoff

Serial No.:

Filing Date:

For: FLUID DISPERSION ASSEMBLY

Customer No. 04219

2800 S.W. Third Avenue
Historic Coral Way
Miami, Florida 33129

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

CERTIFICATE OF EFS-WEB TRANSMISSION

I HEREBY CERTIFY that this correspondence is being transmitted via the U.S. Patent and Trademark Office (USPTO) electronic filing system (EFS-Web) to the USPTO this 29 day of August, 2012.

Respectfully Submitted,

MALLOY & MALLOY, P.L.
Attorneys for Applicant
2800 S.W. Third Avenue
Historic Coral Way
Miami, Florida 33129
(305)858-8000

By: /John Fulton, Jr./
John Fulton, Jr.
Reg. No. 46,716
Email: patents@malloylaw.com

Date: August 29, 2012

Doc Code: **TR.PROV**
Document Description: Provisional Cover Sheet (SB16)

PTO/SB/16 (11-08)
Approved for use through 01/31/2014 OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

Provisional Application for Patent Cover Sheet

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c)

Inventor(s)

Inventor 1 — Remove

Given Name	Middle Name	Family Name	City	State	Country
Marc		Levy	Miami	FL	US

Inventor 2 — Remove

Given Name	Middle Name	Family Name	City	State	Country
Craig		Huck	Waterford	PA	US

Inventor 3 — Remove

Given Name	Middle Name	Family Name	City	State	Country
Steven		Semoff	New City	NY	US

All Inventors Must Be Listed -- Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. — Add

Title of Invention	FLUID DISPERSION ASSEMBLY
Attorney Docket Number (if applicable)	

Correspondence Address

Direct all correspondence to (select one):

(●) The address corresponding to Customer Number	( ) Firm or Individual Name
Customer Number	04219

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

(●) No.

( ) Yes, the name of the U.S. Government agency and the Government contract number are:

Doc Code: TR.PROV
Document Description: Provisional Cover Sheet (SB16)

PTO/SB/16 (11-08)
Approved for use through 01/31/2014 OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

Entity Status

Applicant claims small entity status under 37 CFR 1.27

(●) Yes, applicant qualifies for small entity status under 37 CFR 1.27

( ) No

Warning

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

Signature

Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/John Fulton, Jr./			Date (YYYY-MM-DD)	2012-08-29
First Name	John	Last Name	Fulton, Jr.	Registration Number (if appropriate)	46716

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **This form can only be used when in conjunction with EFS-Web. If this form is mailed to the USPTO, it may cause delays in handling the provisional application.**

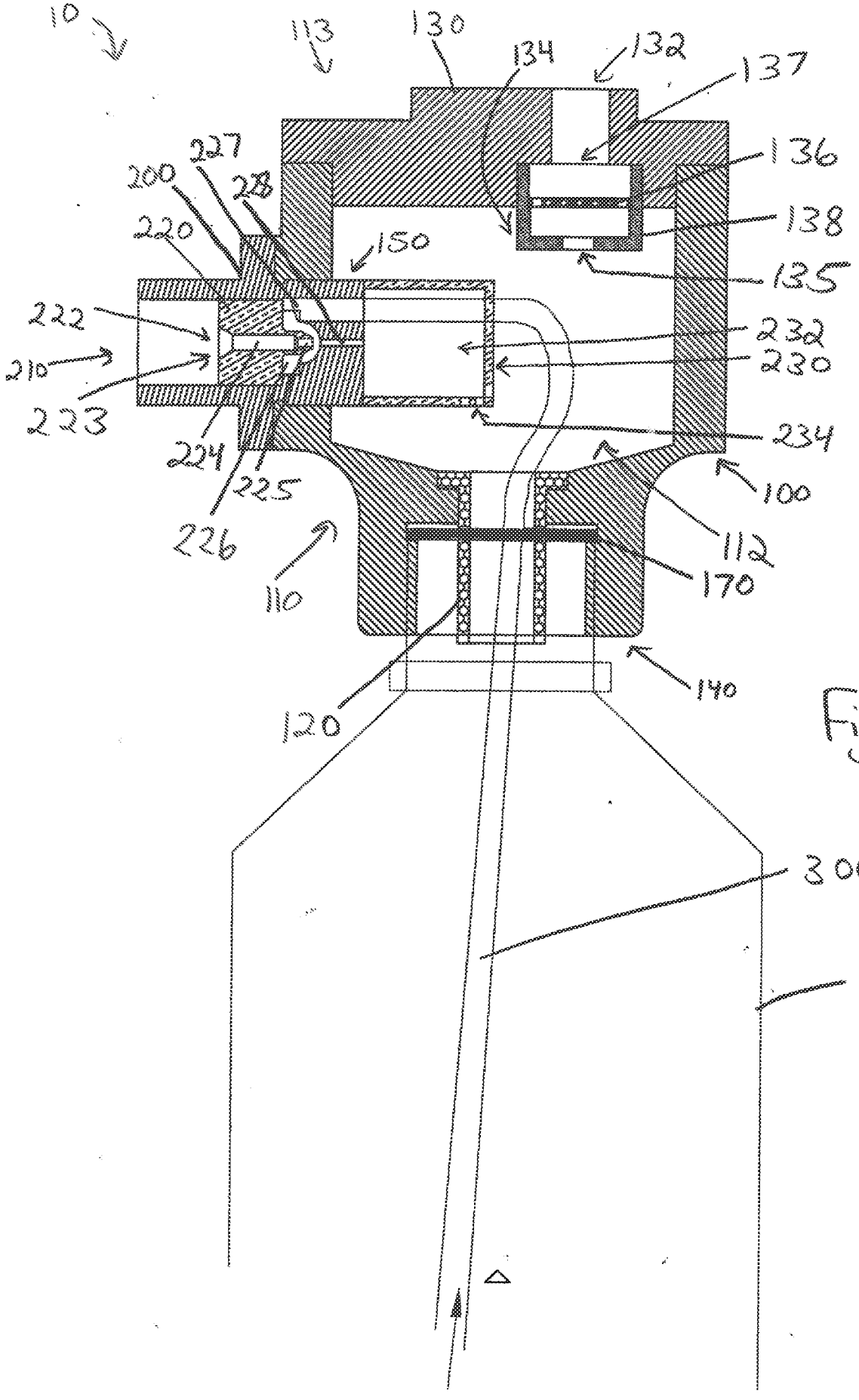

10
113
130
134
132
137
136
138
135
227
228
200
220
150
222
210
223
224
225
226
110
232
230
234
100
112
170
140
120
300
FC

Figure 1

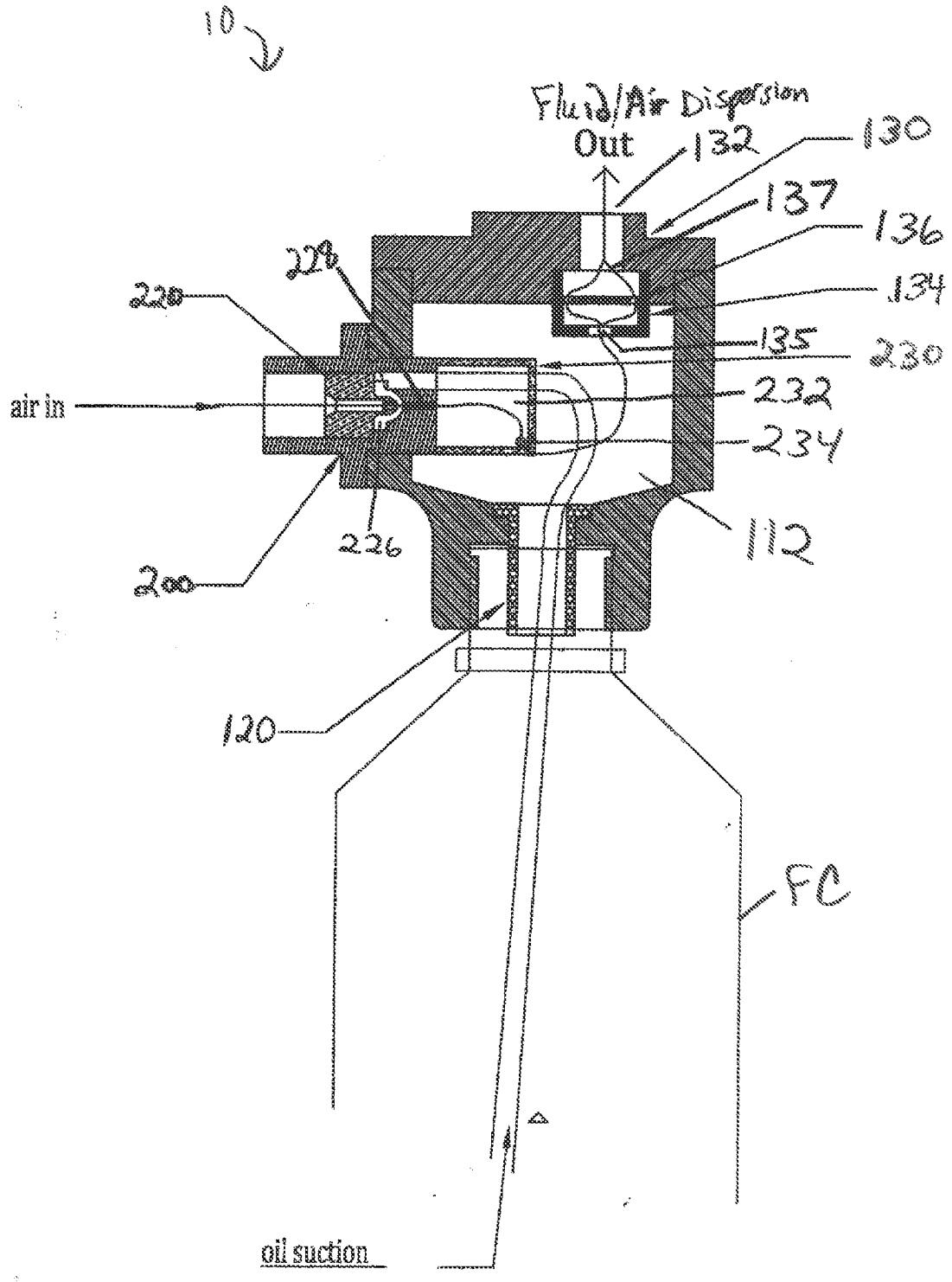

10
Fluid/Air Dispersion Out
132
130
137
136
134
135
230
232
234
228
220
air in
200
226
112
120
FC
oil suction

Figure 2

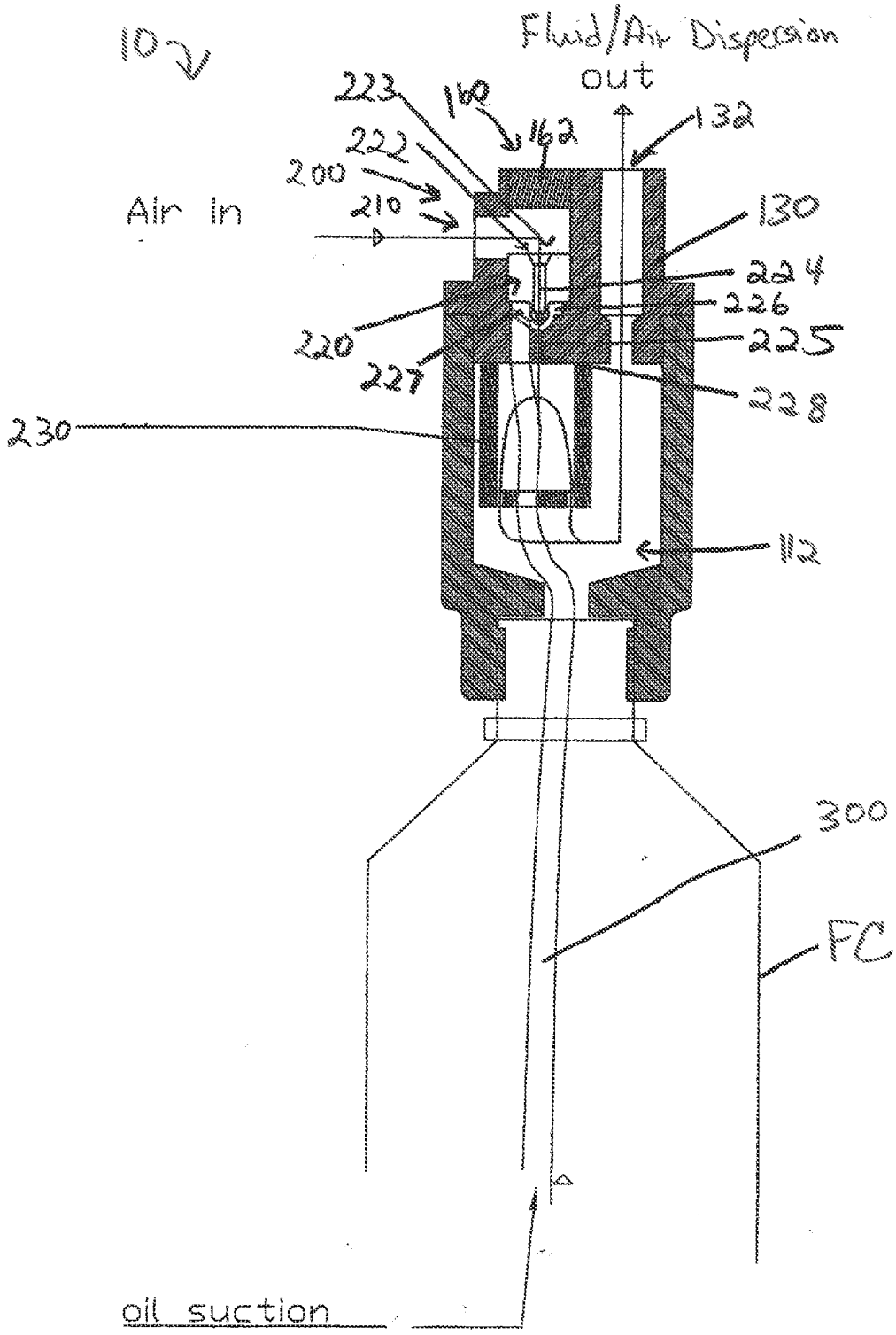

10
Fluid/Air Dispersion
out
223
160
162
132
222
200
Air in
210
130
224
226
220
225
227
228
230
112
300
FC
oil suction

Figure 3

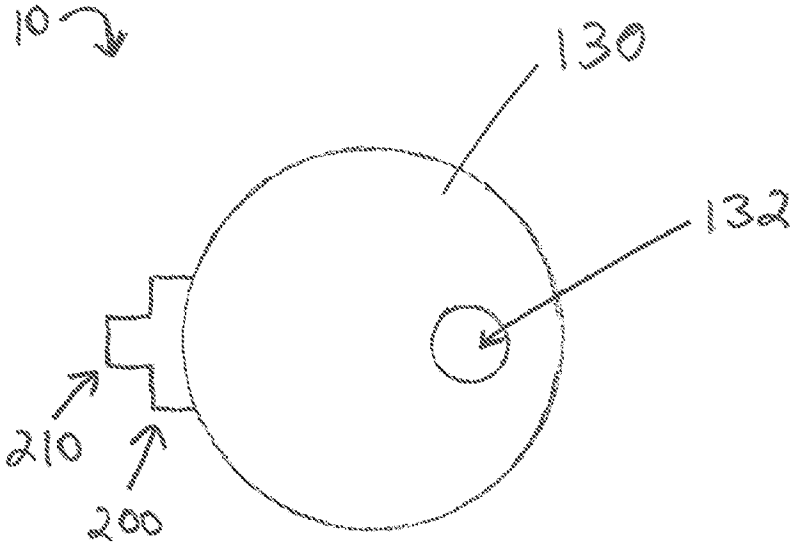


Figure 4

FLUID DISPERSION ASSEMBLY

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates generally to the field of dispersion of various fluids including, but not limited to, fragrant oils, essential oils, odor neutralizers, disinfectants, e.g., triethylene glycol, air sanitizers, and the like, into a generally enclosed airspace.

DESCRIPTION OF THE RELATED ART

There are various devices that can be used to deliver fragrant oils, essential oils, as well as other fluids into the air. Spray cans are commonly used, however, such devices require a user to repeatedly and manually spray when and where necessary. Plug-in devices that heat oils for dispersion into the air are also commonly used, but they require constant heating of the oil via an electrical outlet, which consumes energy and poses a potential fire hazard.

Fluid diffusion devices utilizing forced air for delivery of fragrant oils, essential oils, or other liquids are desirable alternatives to spray cans and plug-in devices since they do not require heating or constant user interaction, however, they have drawbacks as well. One drawback of fluid diffusion devices

utilizing forced air is that they tend to make an undesirable and often, depending on the location, such as an office of other place of business, a disruptive amount of noise when in operation. In particular, the release of a fluid dispersed in the forced airflow from such a device is noisy. As such, there is a need for a fluid dispersion assembly that is designed to significantly reduce the amount of noise while in operation.

SUMMARY OF THE INVENTION

The present invention addresses the need for a forced air diffusion and dispersion assembly for fluids such as fragrant oils, essential oils, , odor neutralizers, disinfectants, air sanitizers, etc., that significantly reduces the amount of noise generated during operation. In at least one embodiment, the present invention is directed to a fluid dispersion assembly which operatively engages a fluid container, and is powered by a compressed air source. The fluid dispersion assembly includes a diffusion unit having oppositely disposed ends, which at least partially defines a diffusion chamber. The diffusion chamber is structured so as to facilitate formation of a fluid dispersion comprising a plurality of substantially uniform droplets prior to discharge from the diffusion chamber.

In at least one embodiment, a cap is cooperatively configured in sealing engagement with one of the oppositely disposed ends of the diffusion unit. Furthermore, the cap may be removably attached

to the diffusion unit. The cap includes a discharge port disposed in communication with the diffusion chamber such that the fluid dispersion can exit the diffusion chamber and into an airspace surrounding the fluid dispersion assembly, while the assembly is in use. In some embodiments, the cap may include a service access port disposed therethrough. The service access port may also include a service access plug removably disposed therein, wherein removal of the service access plug allows for removal, repair, and/or cleaning of select components of the fluid dispersion assembly.

The present fluid dispersion assembly, in at least one embodiment, further includes a container interconnect affixed to a different one of the oppositely disposed ends of the diffusion unit which is cooperatively structured to interconnect the diffusion unit to the fluid container in a substantially sealed relationship. In at least one embodiment, a sealing washer is provided to facilitate formation of the substantially sealed relationship, and a drip tube is disposed in an interconnecting relation between the diffusion chamber and the fluid container, in at least one further embodiment, to protect the sealing washer from contact with the operative fluid(s).

In one embodiment, a diffusion assembly is disposed in an operative engagement with the diffusion unit via a cartridge port. The diffusion assembly is removably engaged with the cartridge port, in at least one embodiment. In some embodiments, the cartridge port is disposed directly through the diffusion unit

between the oppositely disposed ends. The cartridge port may be oriented on the diffusion unit such that the diffusion assembly is at a substantially perpendicular orientation upon engagement relative to the diffusion unit. In at least one other embodiment, a cartridge port is through the cap. The diffusion assembly comprises an atomizer assembly, which in one embodiment comprises an inlet channel, a mixing chamber, and an exhaust channel, wherein the inlet channel is interconnected to the compressed air source and the mixing chamber comprises a fluid inlet disposed in fluid communication with the fluid in the fluid container. Compressed air and fluid are initially mixed together in the mixing chamber to form a fluid dispersion.

The fluid dispersion assembly in one further embodiment includes a suppressor assembly disposed in communication with the diffusion assembly. The suppressor assembly reduces the amount of noise generated during operation of the fluid dispersion assembly.

In yet another embodiment, the fluid dispersion assembly in accordance with the present disclosure comprises a silencer assembly disposed in communication with the discharge port. The silencer assembly further reduces the amount of noise generated during operation of the fluid dispersion in accordance with the present disclosure.

These and other objects, features and advantages of the present invention will become clearer when the drawings as well as the detailed description are taken into consideration.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the nature of the present invention, reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

Figure 1 is a cross-sectional elevation illustrative of one embodiment of a fluid dispersion assembly as disclosed in the present specification.

Figure 2 is a cross-sectional elevation illustrative of another embodiment of a fluid dispersion assembly as disclosed in the present specification.

Figure 3 is a cross-sectional view illustrative of yet another embodiment of a fluid dispersion assembly as disclosed in the present specification.

Figure 4 is a plan view illustrative of an embodiment of a fluid dispersion assembly as disclosed in the present invention.

Like reference numerals refer to like parts throughout the several views of the drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As illustrated in the accompanying figures, and with initial reference to Figures 1 and 2, the present invention is directed to a fluid dispersion assembly, generally indicated as 10, powered by a compressed air source. In at least one embodiment, the fluid

dispersion assembly 10 is further structured to operatively engage a fluid container (FC). The fluid dispersion assembly 10 is structured to combine an amount of an operative fluid with compressed air to generate a fluid dispersion.

More in particular, a "fluid dispersion" in accordance with the present specification shall mean a mixture of an operative fluid in air comprising a plurality of substantially uniform droplets of the operative fluid dispersed throughout the air. Further, and once again, as used in the present specification, "substantially uniform droplets" shall mean droplets having substantially the same diameter. In at least one embodiment, the plurality of "substantially uniform droplets" each have a diameter in the range of about one micron (1 µm), in another embodiment, the diameter of the droplets is in the range of about three microns (3 µm), and, in one further embodiment, droplet diameter is in the range of about five microns (5 µm).

The fluid dispersion assembly 10 includes a diffusion unit 100 having oppositely disposed ends, as at 110 and 113. In one embodiment, the diffusion unit 100 at least partially defines a diffusion chamber 112, and in one further embodiment, the diffusion chamber 112 is substantially enclosed within the diffusion unit 100. The diffusion unit 100 may be constructed of any rigid material or materials which are chemically inert to the intended operative fluid(s) which include, but once again are not limited to, fragrant oils, essential oils, essential oil extracts, , odor

neutralizers, disinfectants, e.g., triethylene glycol, air sanitizers, etc. Further, the material of construction selected for the diffusion unit 100 must be capable of withstanding compressed air at operative pressures, which may range anywhere from about 5 to 50 psig, in most embodiments of the present fluid dispersion assembly 10. In one lower pressure embodiment, the operating pressure of the present fluid dispersion assembly 10 is in the range of about 5 to 10 psig, and in one further embodiment, the operating pressure is in a range of between about 5 to 7 psig. Conversely, a higher pressure embodiment of the present fluid dispersion assembly 10 operates at pressures in the range of about 20 to 25 psig, and in the range of between about 23 to 24 psig in yet one further embodiment. As such, the material or materials of construction of a diffusion unit 100 in accordance with the present specification may include metals, engineered plastic materials, e.g., polyvinyl chloride, high-density polyethylene, etc., and/or composite materials, just to name a few.

A cap 130 is cooperatively configured and disposed in a sealing engagement with one of the oppositely disposed ends 110, 113 of the diffusion unit 100. The cap 130 includes a discharge port 132 therethrough in communication with the diffusion chamber 112, and provides a point of release of the fluid dispersion from the diffusion chamber 112 into the airspace surrounding the fluid dispersion assembly 10. In at least one embodiment, the cap 130 is removably attached in a sealing engagement to the diffusion unit

100. Figure 4 is a plan view of the embodiments of the fluid dispersion assembly 10 as shown in Figures 1 and 2, and shows the cap 130 having a discharge port 132 disposed therethrough. As shown in Figure 3, the cap 130 may include a service access port 160 disposed through it. The service access port 160 may also include a service access plug 162 removably disposed therein, wherein removal of the service access plug 162 allows for removal and cleaning or repair of a diffusion assembly 200, as disclosed in greater detail below.

The fluid dispersion assembly 10, in at least one embodiment, includes a container interconnect 140 which is cooperatively structured to interconnect the diffusion unit 100 to the fluid container (FC) in a substantially sealed relationship. In one embodiment, the container interconnect 140 is mounted at a different one of the oppositely disposed ends 110, 113, i.e., at the oppositely disposed end 110, 113 opposite that of cap 130 of the diffusion unit 100. The substantially sealed relationship between the diffusion unit 100 and the fluid container (FC) may be further enhanced by a sealing washer 170 disposed between the diffusion unit 100 and the fluid container (FC). The sealing washer 170 may be constructed from any of a variety of materials such as, but not limited to, rubber, nylon, plastic, PVC, Teflon, or composite materials, once again, provided the material of construction is substantially inert to the operative fluid(s).

In one further embodiment of a fluid dispersion assembly 10 in

accordance with the present specification, a drip tube 120 is disposed in an interconnecting relation between the diffusion unit 100 and the fluid container (FC). As shown in the figures, the drip tube 120 is disposed through the sealing washer 170, and thus, the drip tube 120 serves to minimize contact between the sealing washer 170 and the operative fluid, by essentially preventing the operative fluid from making contact in and around the sealing washer 170 disposed between the fluid container (FC) and the container interconnect 140. More in particular, the drip tube 120 channels any operative fluid which may agglomerate and/or accumulate in the diffusion chamber 112 through the drip tube 120 directly back into the fluid container (FC) without contacting the sealing washer 170, once again, as may be seen from the figures.

The container interconnect 140 may be structured in a variety of ways to allow interconnection to the fluid container (FC). As one example, the container interconnect 140 may be threaded, internally or externally, such that the diffusion unit 100 is interconnected to the fluid container (FC) by screwing the container interconnect 140 into place onto corresponding threads on the neck of the fluid container (FC). As another example, the container interconnect 140 comprises one portion of a quick-connect type fitting and the fluid container (FC) comprises a complimentary portion of such a quick-connect type fitting whereby once operatively engaged, a substantially sealed relationship is created between the diffusion unit 100 and the fluid container (FC). In at

least some embodiments, the substantially sealed relationship is further enhanced by a sealing washer 170, as disclosed above.

A cartridge port 150 is provided into the diffusion chamber 112 to facilitate operative engagement of a diffusion assembly 200 with the diffusion chamber 112. The diffusion assembly 200 may be removably engaged with the cartridge port 150 to aid in removal and replacement and/or cleaning of the diffusion assembly 200 and/or components thereof. In some embodiments, the cartridge port 150 is disposed directly through the diffusion unit 100 itself and into the diffusion chamber 112, and is positioned between the oppositely disposed ends 110, 113. In at least one embodiment, the cartridge port 150 is positioned on the diffusion unit 100 such that the diffusion assembly 200 is disposed in a substantially perpendicular orientation upon engagement relative to the diffusion unit 100 when operatively engaging the cartridge port 150, such as is shown in the illustrative embodiment of Figure 1. The diffusion assembly 200 is also shown disposed substantially perpendicular to the diffusion unit 100 in the plan view of Figure 4. In at least one other embodiment, the cartridge port 150 is disposed through the cap 130. In yet another embodiment, the diffusion assembly 200 comprises an integral component of the cap 130 itself, such as is illustrated in the embodiment of Figure 3.

As illustrated in Figures 1 and 3, the diffusion assembly 200 comprises an air inlet 210 and an atomizer assembly 220. The atomizer assembly 220 comprises an atomizer air inlet channel 222,

a mixing chamber 226, and an atomizer exhaust channel 228. The atomizer air inlet channel 222 is interconnected to the compressed air source via the air inlet 210. Moreover, the atomizer air inlet channel 222 may also include an inlet aperture 223, a first portion 224 and a second portion 225. The first portion 224 and the second portion 225 are collectively structured to facilitate delivery of compressed air into the mixing chamber 226. The first portion 224 of the atomizer air inlet channel 222 may comprise a larger diameter than the second portion 225, such as is shown in the illustrative embodiment of Figure 1. Of course, it is within the scope and intent of the present invention for the atomizer air inlet channel 222 to comprise a constant diameter along its entire length, i.e., a diameter of a first portion is substantially equal to a diameter of a second portion.

Further, the mixing chamber 226 comprises a fluid inlet 227 disposed in fluid communication with an operative fluid in the fluid container (FC) via a fluid delivery tube 300. The fluid delivery tube 300 is disposed in a fluid communicating relation between the atomizer assembly 220 and the fluid container (FC) to facilitate delivery of an amount of the operative fluid into the atomizer assembly 220. In at least one embodiment, the fluid delivery tube 300 connects to the atomizer assembly 220 via the fluid inlet 227 into the mixing chamber 226.

As shown throughout figures, the fluid inlet 227 is substantially perpendicular to a compressed air flowpath through

the atomizer assembly 200. More in particular, and with reference to Figure 1, the compressed air flowpath extends horizontally through the air inlet 210, atomizer air inlet channel 222, mixing chamber 226, and out through the atomizer exhaust 228.

As such, when compressed air is supplied to the diffusion assembly 200, a corresponding amount of operative fluid is drawn into the mixing chamber 226 through the fluid delivery tube 300 as a result of the venturi effect of the compressed air flowing past the opening of the fluid inlet 227 into the mixing chamber 226. More in particular, at each different compressed air flowrate, i.e., each "predetermined amount" of compressed air which is dictated and fixed by a compressed air operating pressure supplied to diffusion assembly 200, a different corresponding and substantially constant amount, i.e., a "preselected amount" of an operative fluid corresponding to each different predetermined amount of compressed air, will be drawn into the mixing chamber 226. More importantly, the "predetermined amount" of compressed air and the "preselected amount" of the operable fluid are initially mixed together in the mixing chamber 226 to form a fluid dispersion. The diffusion chamber 112 is further structured to facilitate the formation of a plurality of substantially uniform droplets, as defined herein, in the fluid dispersion prior to discharge from the diffusion chamber 112 through discharge port 132.

As illustrated in Figures 1 and 3, the fluid dispersion

assembly 10 also includes a suppressor assembly 230 disposed in communication with the diffusion assembly 200. The suppressor assembly 230 comprises a suppression chamber 232, disposed in a communicating relation with the atomizer exhaust channel 228 of the atomizer assembly 220. More in particular, the suppression chamber 232 receives the fluid dispersion from the mixing chamber 226. The suppressor assembly 230 helps to suppress the noise generated during operation of the fluid dispersion assembly 10 as it disrupts the path of flow of the fluid dispersion out of the atomizer assembly 200 and into diffusion chamber 112, and therefore, disrupts and dampens the sound waves associated therewith. Further, the walls of the suppressor assembly 230 itself serve to absorb and dampen the sound waves generated by the flow of the fluid dispersion out of the mixing chamber 236 through atomizer exhaust channel 238.

The suppressor assembly 230 may also include a suppressor discharge port 234 to facilitate transfer of the fluid dispersion from the suppressor chamber 232 into the diffusion chamber 112. In at lest one embodiment, such as is shown in Figure 1, the suppressor discharge port 234 is located through a low point in the suppressor chamber 232. Of course, as shown in the alternative embodiment of Figure 2, the suppressor discharge port 234 is located through the sides of the suppressor chamber 232.

In at least one embodiment, a fluid dispersion assembly 10 in accordance with the present specification further includes a

silencer assembly 134 in communication with the discharge port 132, as illustrated in Figures 1 and 2. The silencer assembly 134 serves to further minimize the amount of noise generated during operation of the fluid dispersion assembly 10. The silencer assembly 134 comprises a baffle 136 disposed in a silencer chamber 138 between a silencer inlet 135 and a silencer outlet 137. The baffle 136 is structured and disposed to further disrupt the flow of the fluid dispersion through the fluid dispersion assembly 10, and more specifically, through the silencer chamber 138. In at least one embodiment, the silencer inlet 135 is disposed relative to the baffle 136 to at least partially, if not substantially, direct the flow of the fluid dispersion towards the baffle 136, so as to maximize the disruption of flow. Once again, as disclosed above with regard to the suppressor assembly 230, the disruption in the flow of the fluid dispersion though the silencer assembly 134 also creates a disruption and dampering of the sound waves associated therewith. As a result, the amount of noise generated during the operation of a fluid dispersion assembly 10 in accordance with the present specification is significantly reduced.

Since many modifications, variations and changes in detail can be made to the described preferred embodiment of the invention, it is intended that all matters in the foregoing description and shown in the accompanying drawings be interpreted as illustrative and not in a limiting sense. Thus, the scope of the invention should be determined by the appended claims and their legal equivalents.

Now that the invention has been described,

What is claimed is:

1. A fluid dispersion assembly disposable into an operative engagement with a fluid container which contains an operative fluid and is powered by a compressed air source, said fluid dispersion assembly structured to generate a fluid dispersion comprising a plurality of substantially uniform droplets of the operative fluid in air and to discharge the fluid dispersion into an airspace surrounding said fluid dispersion assembly, said fluid dispersion assembly comprising:

a diffusion unit having oppositely disposed ends, wherein said diffusion unit at least partially defines a substantially enclosed diffusion chamber,

a cap cooperatively configured and disposed in a sealing engagement with one of said oppositely disposed ends of said diffusion unit,

a discharge port disposed in fluid communication between said diffusion chamber and the airspace surrounding said fluid dispersion assembly,

a diffusion assembly disposed in an operative engagement with said diffusion unit via a cartridge port, wherein said diffusion assembly comprises an atomizer assembly,

said atomizer assembly comprising an atomizer air inlet channel, a fluid inlet, a mixing chamber, and an exhaust channel,

said atomizer air inlet channel structured to interconnect to the compressed air source and said fluid inlet disposable into

fluid communication with the operative fluid in the fluid container, wherein a predetermined amount of the compressed air and a preselected amount of the operative fluid are mixed together in said mixing chamber to form the fluid dispersion,

a suppressor assembly disposed in communication with said diffusion assembly, said suppressor assembly comprising a suppression chamber structured to reduce an amount of noise generated during operation of said fluid dispersion assembly, and

said diffusion chamber structured to facilitate formation of the plurality of substantially uniform fluid droplets of the fluid dispersion prior to discharge of the fluid dispersion from said diffusion chamber into the airspace through said discharge port.

2. The assembly of claim 1 wherein said cartridge port is disposed through said diffusion unit between said oppositely disposed ends.

3. The assembly of claim 1 wherein said cartridge port is disposed through said cap.

4. The assembly of claim 1 further comprising a service access port through said cap, said service access port at least partially defining an access opening.

5. The assembly of claim 4 further comprising a service access plug removably disposed in a substantially sealing engagement with said access opening of said service access port.

6. The assembly of claim 1 further comprising a fluid delivery tube, wherein said fluid delivery tube is disposed in a fluid

communicating relation between said atomizer assembly and the fluid container to facilitate delivery of the preselected amount of fluid to said atomizer assembly.

7. The assembly of claim 6 wherein one end of said fluid delivery tube is interconnected to said fluid inlet of said diffusion chamber and said opposite end of said fluid delivery tube is structured to extend into the operative fluid in the fluid container.

8. The assembly of claim 1 wherein said exhaust channel of said atomizer assembly disposed in a communicating relation between said mixing chamber and said suppression chamber to facilitate transfer of the fluid dispersion therebetween.

9. The assembly of claim 1 wherein said suppressor assembly further comprises a suppressor discharge port disposed between said suppression chamber and said diffusion chamber to facilitate transfer of the fluid dispersion from said suppression chamber into said diffusion chamber.

10. The assembly of claim 1 further comprising a silencer assembly having a silencer inlet, a silencer outlet, and a baffle.

11. The assembly of claim 10 wherein said baffle partially restricts the movement of the fluid dispersion through said silencer chamber from said silencer inlet to said silencer outlet, thereby reducing the amount of noise generated during operation of said fluid dispersion assembly.

12. The assembly of claim 1 wherein said diffusion assembly

removably engages said cartridge port.

13. The assembly of claim 1 wherein said diffusion assembly is disposed in a substantially perpendicular orientation relative to said diffusion unit.

14. The assembly of claim 1 further comprising a container interconnect mounted to a different one of said oppositely disposed ends of said diffusion unit and cooperatively structured to interconnect said diffusion unit to the fluid container in a substantially sealed relationship,

15. The assembly of claim 14 wherein said container interconnect comprises a sealing washer disposed between said diffusion unit and the fluid container to maintain said substantially sealed relationship.

16. The assembly as recited in claim 15 further comprises a drip tube, said drip tube disposed in an interconnecting relation between said diffusion chamber and the fluid container through said sealing washer, wherein said drip tube is structured to minimize contact between said sealing washer and the operative fluid.

17. The assembly of claim 1 wherein said fluid delivery tube connects to said atomizer assembly via said fluid inlet of said diffusion chamber.

18. The assembly of claim 1 wherein said diffusion unit is constructed of an engineered plastic material.

19. The assembly of claim 1 wherein said suppressor assembly is constructed of an engineered plastic material.

20. The assembly of claim 1 wherein said silencer assembly is constructed of an engineered plastic material.

ABSTRACT OF THE DISCLOSURE

A fluid dispersion assembly comprises a diffusion unit disposed in fluid communication with a fluid container, the assembly being powered by a compressed air source. The diffusion unit at least partially defines a diffusion chamber, and includes a diffusion assembly containing an atomizer assembly which, in combination with the diffusion chamber, generates a fluid dispersion from a mixture of compressed air and an operative fluid, for example, fragrant oils, essential oils, odor neutralizers, disinfectants such as triethylene glycol, air sanitizers, etc. The diffusion unit further includes a suppressor assembly and/or a silencer assembly to reduce the amount of noise generated during operation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
61/694,500	08/29/2012		125	1.106.12		

CONFIRMATION NO. 8663

4219
MALLOY & MALLOY
2800 S.W. THIRD AVENUE
HISTORIC CORAL WAY
MIAMI, FL 33129

FILING RECEIPT

OC000000056335891

Date Mailed: 09/10/2012

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Marc Levy, Miami, FL;
Craig Huck, Waterford, PA;
Steven Semoff, New City, NY;

Power of Attorney: The patent practitioners associated with Customer Number 04219

If Required, Foreign Filing License Granted: 09/04/2012
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/694,500**
Projected Publication Date: None, application is not eligible for pre-grant publication
Non-Publication Request: No
Early Publication Request: No
** **SMALL ENTITY** **
Title

FLUID DISPERSION ASSEMBLY

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international

patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and

Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage, facilitate, and accelerate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.