

Attorney Docket No.: 6561-1
Inventor: Thomas F. Belcher

U.S. Provisional Patent Application

Attorney Docket No.: 6561-1

Title:

Liquid Decanting Method and Apparatus

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Liquid Decanting Method and Apparatus

. Background

[0001] Historically, wine decanting was a process to filter out sediment left in the wine bottle after aging, and mixing air into the wine to enhance its taste. As used here, decanting will be defined as a process to aerate wine or oxygenate wine. In order for wine to reach its optimum drinking potential, typically one allows the wine to “breathe” which means expose the wine to air, preferably for a number of hours. Traditionally this has been done by uncorking a bottle and pouring the wine into another vessel which has a widened body so that a greater surface area of wine is exposed to the air. Exposure to air helps break up and dispel the concentrated gasses present in the wine which have been kept from exposure to air up until the point that the bottle is opened. The decanting process is recognized to improve flavors and balancing on the palate by increasing depth and complexity of the wine’s undertone flavors as well as softening harsh tannins and opening up its aromatics. It is the oxygen in the air that is believed responsible for the decanting process. Since air consists of 78% nitrogen and only 21% oxygen, exposing the wine to concentrated oxygen through greater surface contact measurably performs the decanting process in a greatly accelerated process.

[0002] The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate various example systems, methods, and so on that illustrates various example embodiments of aspects of the invention. It will be appreciated that the illustrated element boundaries (e.g., boxes, groups of boxes, or other shapes) in the figures represent one example of the boundaries. One of ordinary skill in the art will appreciate that one element may be designed as multiple elements or that multiple elements may be designed as one element. An element shown as an internal component of another element may be implemented as an external component and vice versa. Furthermore, elements may not be drawn to scale.

Description of Drawings

[0003] FIGURE 1 is a perspective view of an example decanter.

[0004] FIGURE 2 is a perspective view of an example decanter in use.

- [0005] FIGURE 3 is a perspective view of an example decanter in use.
- [0006] FIGURE 4 is a diagrammatic view of an example commercial decanting system in use.
- [0007] FIGURE 5 is a front perspective view of an example commercial decanting system in use.
- [0008] FIGURE 6 is a diagrammatic and schematic view of an example commercial decanting system in use.
- [0009] FIGURE 7 is a diagrammatic view of an example decanting system in use.
- [0010] FIGURE 8 is a perspective view of an example decanter.
- [0011] FIGURE 9 is a perspective view of an example decanter including various sized “gas” cartridges.
- [0012] FIGURE 10 is a side perspective view, an exploded side perspective, and a top plan form view of an example decanter.
- [0013] FIGURE 11 is a cut away perspective view of an example decanter.
- [0014] FIGURE 12 is a perspective view and functional block diagram of an example decanter.
- [0015] FIGURE 13 is a chart of experimental data.
- [0016] FIGURE 14 is a chart of experimental data.

Detailed Description

[0017] With reference to FIGURE 1, a hand held decanter depicted includes vessel **1** containing pressurized oxygen, oxygen enriched air, or air (hereafter “gas”). A dispenser device **2** is shown as being attached to the top end of the vessel **1** and able to selectively dispense contents of the vessel **1** through an adaptor tube **3**, a second adaptor tube **4**, and a fine bubble diffuser dispersion nozzle **5**. The second adaptor tube **4** may be needed when the decanter will be used with a bottle of wine. Dispenser **2** may attach to the vessel **1** by press fit through a frictional fit or machine threads to screw into the vessel **1**. An adaptor tube **3** may connect to the dispenser **2** and a second adaptor tube **4** by press fit through a frictional fit or machine threads to screw into dispenser **2** and adaptor tube **4**. A second adaptor tube **4**, if desired, may be attached by screw or frictional fit into an adaptor tube **3** and a fine bubble diffuser **5**. The fine bubble diffuser or dispersion nozzle **5** may include one or more holes

through which the contents in vessel **1** are directed into a liquid such as an opened glass or bottle of wine or spirits (not shown). Nozzle cap **6** may snap or screw on to the fine bubble diffuser **5** after use to prevent dripping or leaking of wine or spirits after usage.

[0018] With reference to FIGURE 2, a hand held decanter depicted includes vessel **1** containing gas. A dispenser device **2** is shown as being attached to the top end of the vessel **1** and able to control dispersion of the contents of the vessel **1** through an adaptor tube **4**, and a dispersion nozzle **5**. Dispenser **2** attaches to the vessel **1** by press fit or machine threads. An adaptor tube **4** may be connected to a dispenser **2** and a fine bubble diffuser **5** where a path of gas or fluid communication is established between vessel **1** and dispersion nozzle **5**. The dispersion nozzle **5** may include one or more holes **33** through which the contents of vessel **1** may be directed into a glass of wine or spirits.

[0019] With reference to FIGURE 3, a hand held decanter includes vessel **1** containing gas. A dispenser device **2** is shown as being attached to the top end of the vessel **1** and able to control passage of the contents from the vessel **1**. Dispenser **2** connects to the vessel **1** and establishes a pathway for contents to be released from vessel **1**. An adaptor tube **3** connects to the dispenser **2** with a second adaptor tube **4** which in turn connects to the fine bubble diffuser **5**. The fine bubble diffuser dispersion nozzle **5** defines a path from a proximal end **32** connected to the second adaptor tube **4** to a plurality of holes disposed around a distal end **34**.

[0020] With reference to FIGURE 4, a commercial tap dispensing decanter is depicted including a tank **7** containing gas. An on/off valve **8** is shown as being attached to the top of tank **7**. Tubing or hose **9** is shown connecting the on/off valve **8** to pressure regulators **10**, decanter dispensing tap housing **11**, and decanter dispensing tap handle **12**. Housing **11** is shown to enclose the adaptor tube **13** and allow the system to sit out in the open for use in a commercial setting such as, but not limited to, a bar, tavern, or wine tasting room. A tap handle on/off valve **12** is shown penetrating the top of the housing **11**. When the tap handle **12** is turned to the "on" position, a direct injection of gas is delivered through the adaptor tube **13** and the diffuser nozzle **5** directly into a glass of wine or spirits.

[0021] With reference to FIGURE 5, a commercial tap dispensing decanter is depicted including a housing **11** shown to enclose the adaptor tube **13** and allow the system to sit out

in the open for use in a commercial setting such as, but not limited to, a bar, tavern, or wine tasting room. A tap handle on/off valve **12** may be turned to the “on” position to provide a direct injection of gas through the adaptor tube **13**, a second adaptor tube **15** and the diffuser nozzle **14**.

[0022] With reference to FIGURE 6, an exemplary decanter including touchpad **18** is depicted. The touchpad **18** allows the user to program the length of time the gas is dispensed based on the volume to be oxygenated or decanted and the particular wine or spirits to be oxygenated or decanted.

[0023] With continued reference to FIGURE 6, a schematic diagram for the touchpad unit **18** which contains individual valves, **V1**, **V2**, and **V3** each controlled by an associated touchpad **T1**, **T2**, and **T3**, respectively. A common gas source S is connected to each valve V through a distribution manifold M in communication with a set of regulators **R1**, **R2**, and **R3**. **D1**, **D2**, and **D3** refer to the dispensers associated with each touchpad **T1**, **T2**, and **T3**, respectively.

[0024] With reference to FIGURE 7, a commercial decanter depicted using an exemplary “Loc-Line” type non-metallic adjustable tubes **19** to direct gas through the nozzle **14**. Other conduit or paths may be used to carry the gas from a source to an end nozzle without loss of functionality.

[0025] With reference to FIGURE 8, a hand held decanter is depicted with a programmable dispensing mechanism **20** wherein one can program a set amount of gas to be dispersed or a set amount of time for the gas to flow. Alternate or additional controls may be provided to vary the dispersion based on gas to be injected, vessel size to be decanted, or particular liquid to be decanted. The programmable dispensing mechanism is attached to a vessel containing gas. A finger triggers **21** to activate the programmable dispensing mechanism.

[0026] With reference to FIGURE 9, a hand held metered distribution decanter is shown with varying sizes of compact cartridges **22** and **23** which can be inserted into the handle of the device. The metered distribution decanter contains a duration regulator which controls the volume of a gas, such as oxygen being delivered. A finger trigger **21** or other suitable user control may be used to activate the metered distribution decanter.

[0027] With reference to FIGURE 10, a hand held decanter may include a compact oxygen cartridge **22** which fits inside an exterior housing cup **24**. A dispensing head **25** with male threads may be fit onto the exterior housing cup **24** female threads or vice versa. An adaptor tube **4** is shown exiting the dispensing head **25** by a hinged connector **26** which has the ability to swivel 90 degrees.

[0028] With reference to FIGURE 11, a hand held decanter may include a pressure pump vessel device **27** with top **28**. In one embodiment when the top **28** is pumped up and down by hand, the vessel **27** is pressurized with air. The air may be released by activating trigger **26**. This embodiment allows maximization of air decanting by dispersing the air through the adaptor tube and the fine bubble nozzle **5** and exposing the air to a greater surface area of the wine or spirits.

[0029] With reference to FIGURE 12, a commercial tap dispensing decanter may include housing **11**, an adaptor tube **13**, and a diffuser **5**. A diaphragm or other air pump **29** is shown as being electrically powered, but in an alternate embodiment, it may be battery operated. Air is pumped into the system by the air pump **29** and a predetermined amount of air is directed into the liquid through the adaptor tube **13**, and the diffuser **5** by selecting “on” on the on/off button **31**. The volume of air released or the amount of time the air is released may be programmed using a timer button **30** or other programmable mechanisms described above.

[0030] With reference to FIGURE 13, preliminary comparison experiments were performed using a Milwaukee MI605 to measure dissolved oxygen content in a 2008 Red Truck wine when using a Control Glass, a hand-held embodiment similar to that depicted in Figure 1, and a venturi-type decanting device such as that sold by Vinturi, Inc. under the name Vinturi. The “y” axis labeled “% Dissolved Oxygen” depicts the percent oxygen dissolved as measured by the MI605. With reference also to Table 1, the wine was directly poured out of a freshly uncorked bottle into a glass for the “Control Glass (G1)”. The second glass labeled “OxyVin (G2)” was also poured directly out of the same freshly uncorked bottle and decanted using an implementation similar to that depicted in Figure 2 with the vessel containing 95% oxygen enriched air. The third glass labeled “Venturi Glass (G3)” was also poured directly out of the same freshly uncorked bottle directly through the venturi

device into the glass. The data are shown below in Table 1 and as a graph at Figure 13 as percent dissolved oxygen as a function of time.

Table 1

Minutes	Control Glass (G1)	OxyVin Glass (G2)	Venturi Glass (G3)
0	23%	103%	41%
22	32%		
24		100%	
25			41%
35	36%		
37		99%	
38			46%
60	45%		
62		95%	
63			55%
145	70%		
148		93%	74%
180	76%		
183		90%	
184			79%

[0031] With reference to FIGURE 14, additional experimental results show the effort needed to reach relatively high levels of dissolved oxygen using just a venturi-type device. A single glass (G4) was repeatedly poured through a venturi device twelve times with the dissolved oxygen measured after each pour. As is apparent from Table 2, nine pours through the venturi-type device is required to achieve dissolved oxygen levels greater than 80%.

Table 2

Venturi Glass G4	%DO
x0	23%
x1	41%
x2	45%
x3	47%
x4	49%
x5	59%
x6	67%
x7	75%
x8	79%
x9	83%
x10	84%
x11	86%
x12	88%

[0032] While the systems, methods, and so on have been illustrated by describing examples, and while the examples have been described in considerable detail, it is not the intention of the applicants to restrict or in any way limit the scope of the appended claims to such detail. It is, of course, not possible to describe every conceivable combination of components or methodologies for purposes of describing the systems, methods, and so on provided herein. Additional advantages and modifications will readily appear to those skilled in the art. For example, while certain of the devices depicted and described herein employ pressurized oxygen, oxygen enriched air, air or a diaphragm or other air pump, the gas source may alternately include an oxygen generating or distributing device such as an oxygen generator or oxygen concentrator without loss of functionality. Therefore, the invention, in its broader aspects, is not limited to the specific details, the representative apparatus, and illustrative examples shown and described. Accordingly, departures may be

made from such details without departing from the spirit or scope of the applicants' general inventive concept. Thus, this application is intended to embrace alterations, modifications, and variations that fall within the scope of the appended claims. Furthermore, the preceding description is not meant to limit the scope of the invention. Rather, the scope of the invention is to be determined by the appended claims and their equivalents.

[0033] As used herein, "connection" or "connected" means both directly, that is, without other intervening elements or components, and indirectly, that is, with another component or components arranged between the items identified or described as being connected. To the extent that the term "includes" or "including" is employed in the detailed description or the claims, it is intended to be inclusive in a manner similar to the term "comprising" as that term is interpreted when employed as a transitional word in a claim. Furthermore, to the extent that the term "or" is employed in the claims (e.g., A or B) it is intended to mean "A or B or both". When the applicants intend to indicate "only A or B but not both" then the term "only A or B but not both" will be employed. Similarly, when the applicants intend to indicate "one and only one" of A, B, or C, the applicants will employ the phrase "one and only one". Thus, use of the term "or" herein is the inclusive, and not the exclusive use. See, Bryan A. Garner, *A Dictionary of Modern Legal Usage* 624 (2d. Ed. 1995).

Claims

1. A decanter comprising:

a vessel containing pressurized gas

a dispensing device for dispensing contents of said vessel

an adaptor tube in selective fluid communication with the pressurized gas on a first, proximal end

a nozzle in fluid communication with the adaptor tube at a second, distal end of the adaptor tube

a dispensing mechanism to selectively dispense an amount of the pressurized gas to the nozzle

2. The methods and devices set forth in the description and drawings herein.

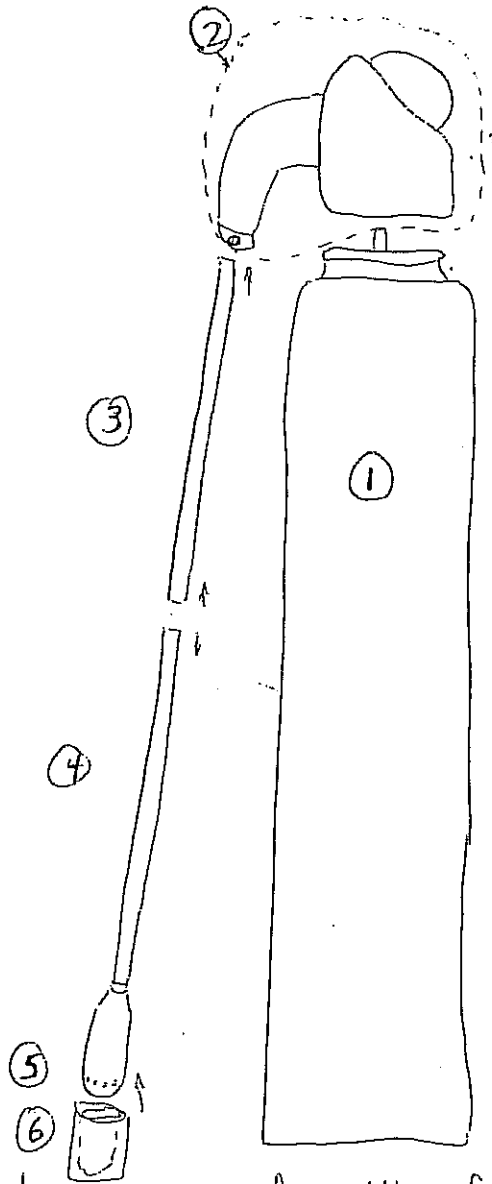
Liquid Decanting Method and Apparatus

Abstract

An apparatus and method for delivering a direct injection of oxygen, oxygen enriched air, or air through a delivery system from one vessel containing a higher pressure concentration of the gas into another vessel containing a liquid at atmospheric pressure introduced through a fine bubble diffuser or dispersion nozzle including one or more passages in a controlled, regulated manner. This process and apparatus provides the liquid with an oxygenation level for optimum flavor in a short amount of time.

HAWG HELD Portable consumer version "OXY-VIN" or "oxyvini"

Possible TRADE NAMES



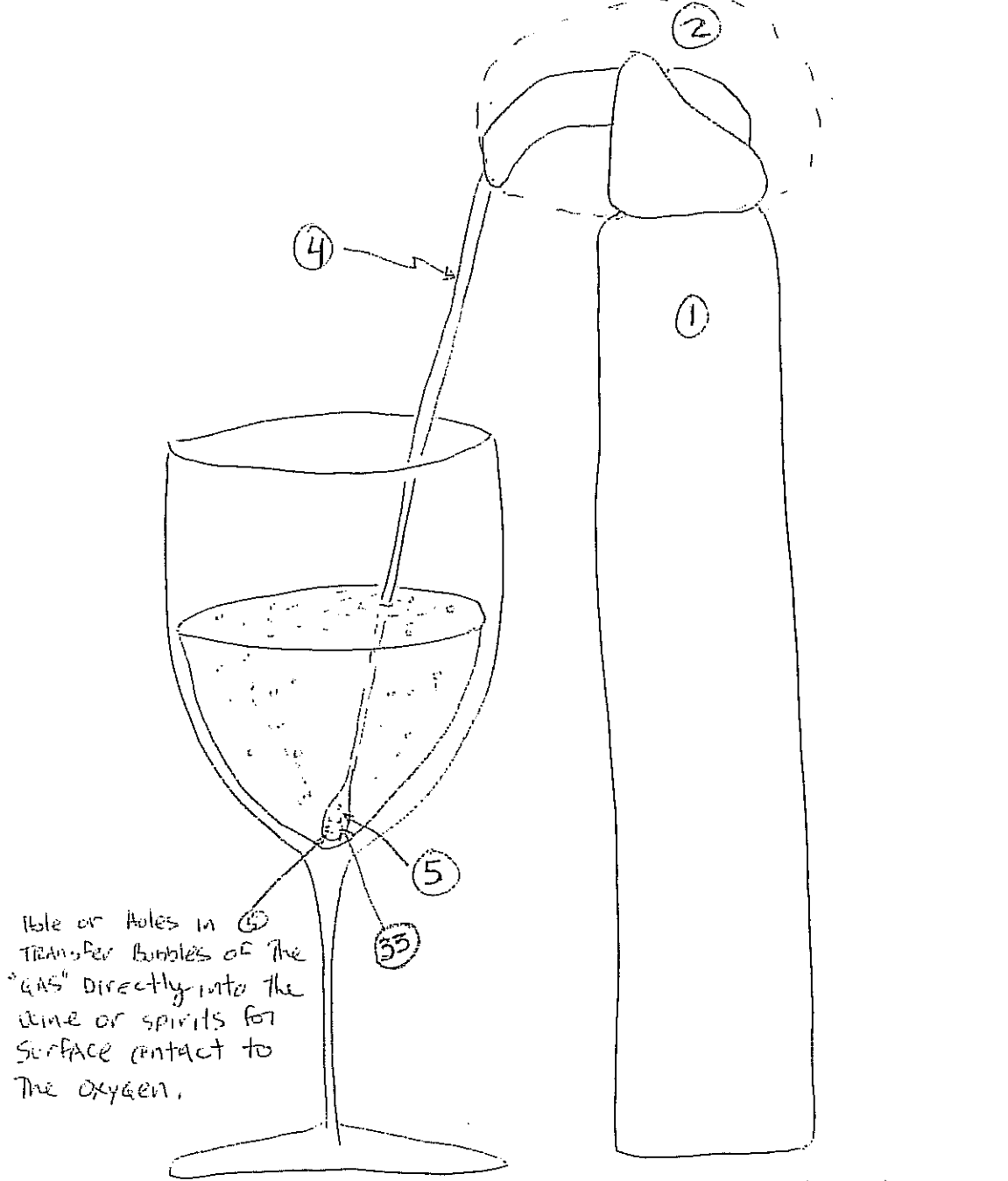
- ① vessel containing pressurized Oxygen, Oxygen enriched AIR, OR AIR ("GAS").
- ② dispenser device to regulate & dispense contents in vessel ① through ③, ④, and ⑤.
- ③ adaptor tube which connects to ② and ④ by machined threads to screw into ② and ④ or press fit through a Frictional Fit.
- ④ second adaptor tube which either screws into ③ and ⑤ with machine threads or Press Fit through a Frictional Fit.
- ⑤ Fine Bubble diffuser Dispersion nozzle consists of one or more holes through which the contents in vessel ①

is directed into an opened. Bottle of Wine or spirits or a Drinking glass containing The wine or spirits.

- ⑥ nozzle cap to prevent dripping AFTER USE, snaps OR screws on.

Figure 1

HAND HELD BREATHABLE CONSUMER VERSION "OXY-VIN"

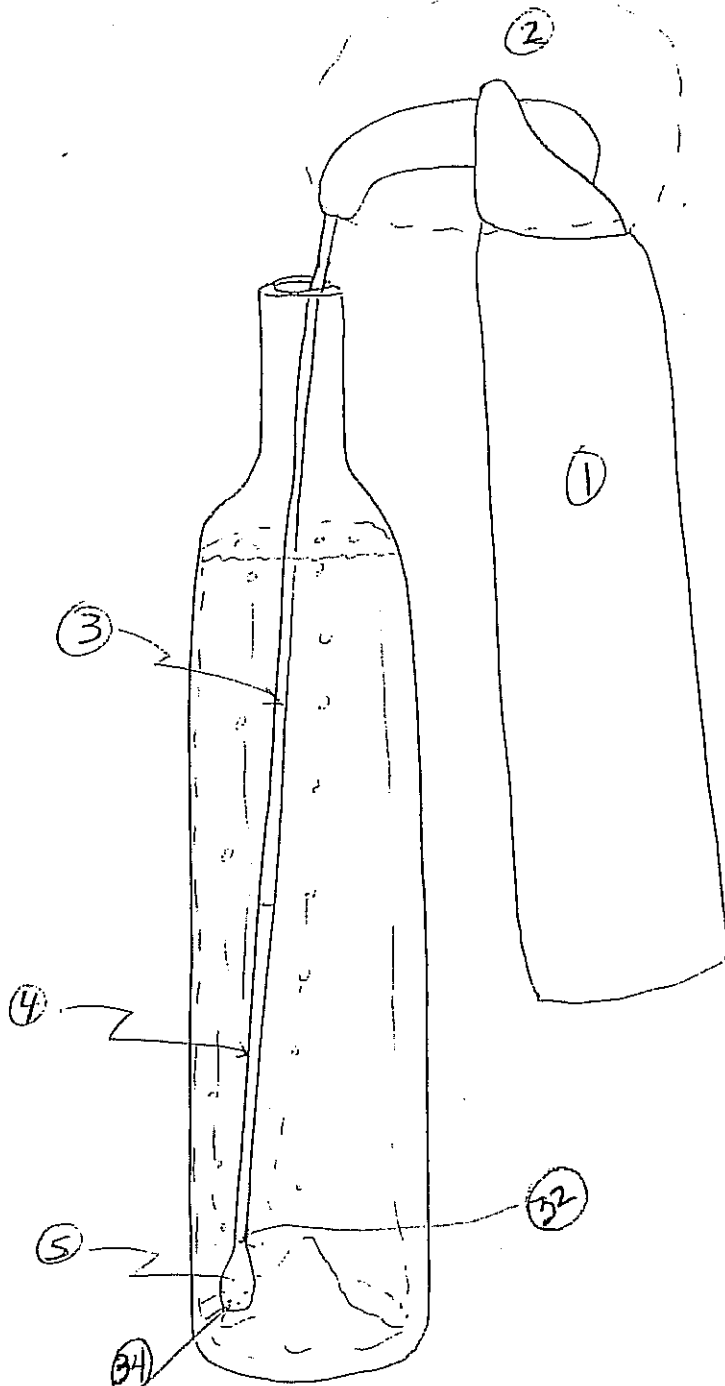


Hole or Holes in (5) transfer bubbles of the "GAS" directly into the wine or spirits for surface contact to the oxygen.

Oxygen/oxygen enriched Air/Air Being delivered directly into a drinking glass of wine or spirits. The "GAS" is transferred from (1) through (4) and finally through (5).

Figure 2

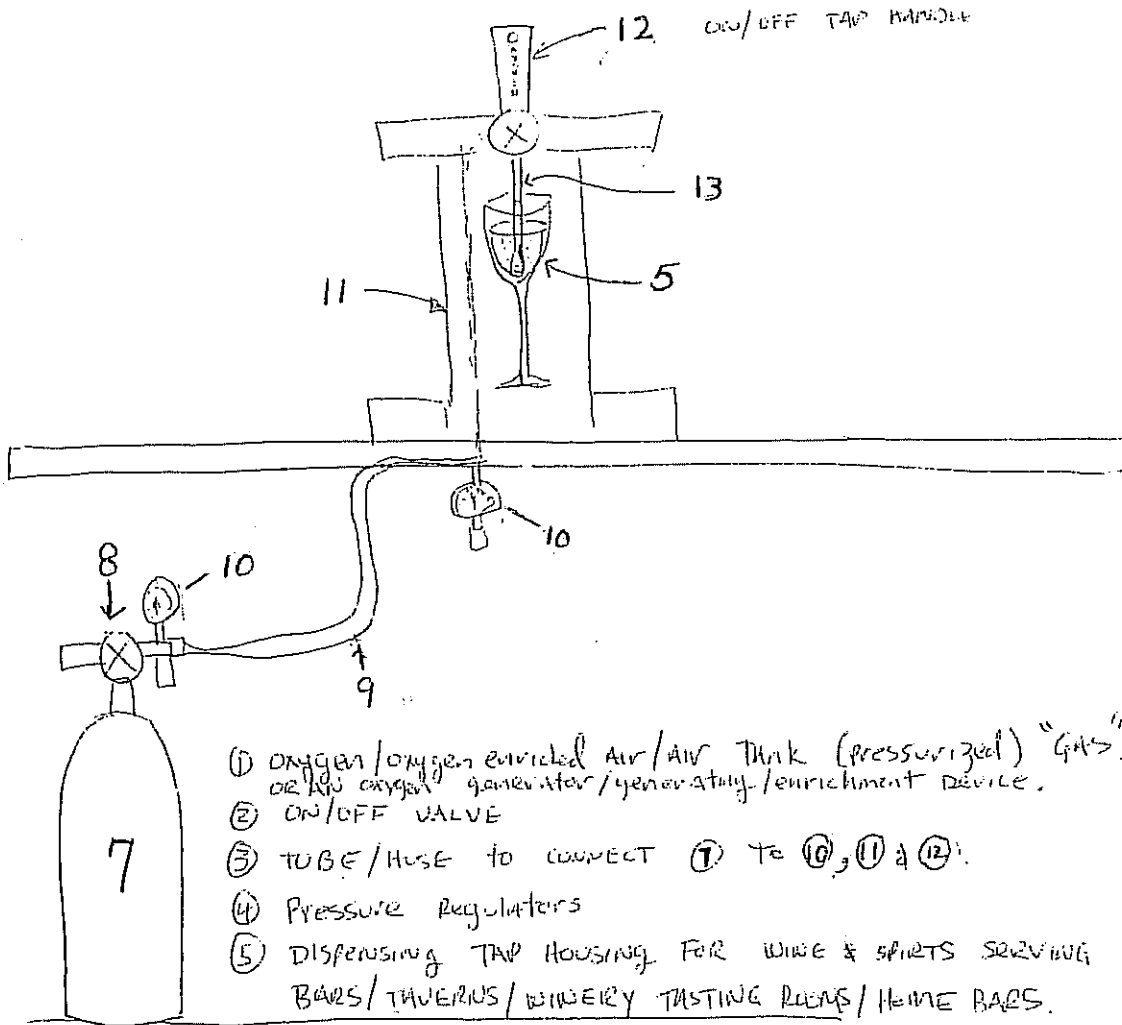
HAND HELD PORTABLE CONSUMER VERSION "OXY-VIN"



The Gas From ① Being Directly Delivered into An Opened Bottle of Wine or SPIRITS. THE GAS IN ① IS Dispensed Through ② Directed through ③, ④, And ⑤.

Hole or Holes in ⑤ Transfer Bubbles of the Gas Directly into The wine or SPIRITS FOR surface contact to the oxygen.
Figure 3

"OXY-VIN" COMMERCIAL TAP DISPENSING VERSION.



- ① OXYGEN/oxygen enriched AIR/AIR Tank (pressurized) "GAS" OR low oxygen generator/generating/enrichment device.
- ② ON/OFF VALVE
- ③ TUBE/HOSE to connect ① to ④, ⑤ & ⑥.
- ④ Pressure Regulators
- ⑤ DISPENSING TAP HOUSING FOR WINE & SPIRITS SERVING BARS/TAVERNS/BREWERY TASTING ROOMS/HOME BARS.
- ⑥ DISPENSING "OXY-VIN" TAP HANDLE VALVE, when turned to "ON" position like a BEER TAP, delivers a direct injection of "GAS" through the adaptor tube/tubes AND through the fine bubble diffuser dispersion nozzle directly into a glass or bottle of wine or SPIRITS.

Figure 4

"OXY-VIN" COMMERCIAL TAP
Dispensing Version

Shows Delivering A Direct Injection
OF "GAS" INTO AN OPENED BOTTLE OF
WINE OR SPIRITS.

- ② opened bottle
- ③ wine or spirits.

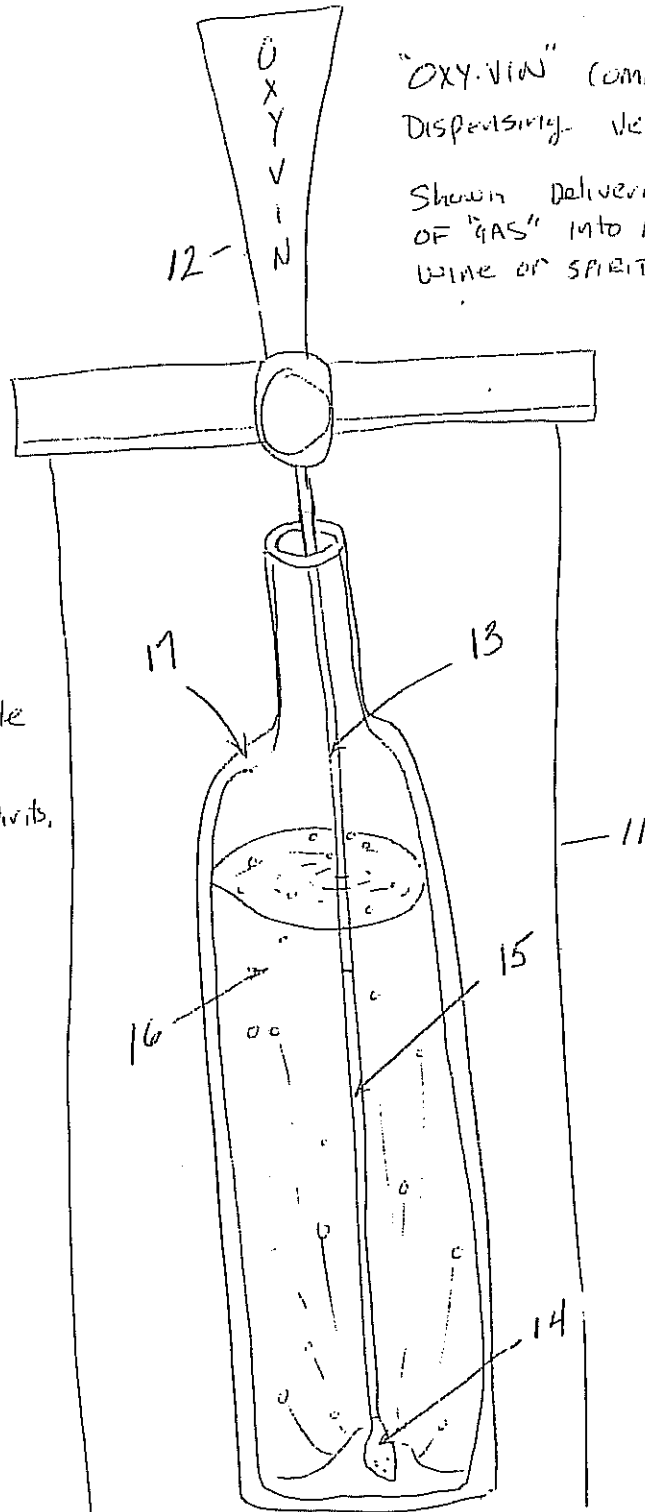


Figure 5

OXY-VIN COMMERCIAL DISPENSOR WITH TOUCHPAD TO PROGRAM THE LENGTH OF TIME THE "GAS" IS DISPENSED BASED ON THE VOLUME TO BE OXYGENATED AND THE PARTICULAR WINE OR SPIRITS TO BE OXYGENATED (CABERNET SAUVIGNON, MERLOT, SYRAH, BOTTLE (750ml), GLASS, etc.)

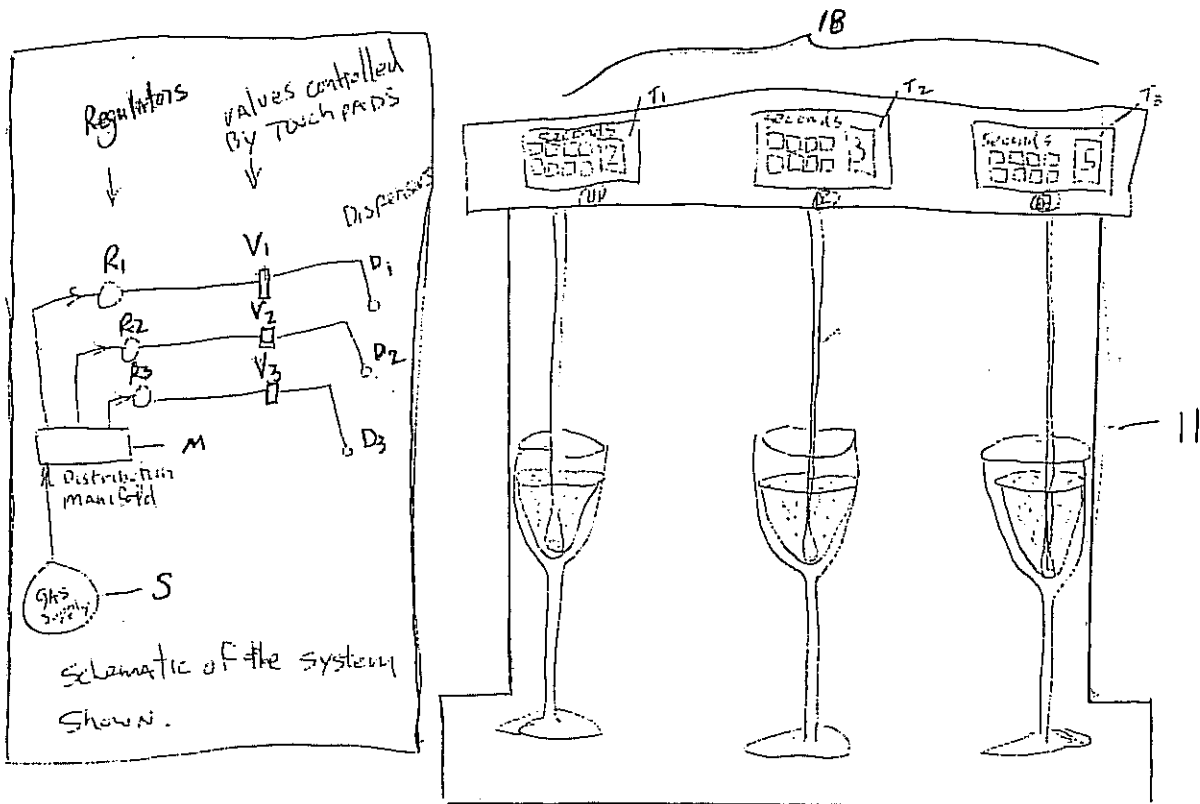


Figure 6

OXYVIN COMMERCIAL DISPENSOR USING "LOC LINE" TYPE ADJUSTABLE TUBES TO DIRECT "GAS" THROUGH THE FINE BUBBLE DISPERSION NOZZLE. THIS WOULD ENABLE THE NOZZLE TO BE POSITIONED MORE EASILY INTO AN EXTERNAL GLASS OR BOTTLE.

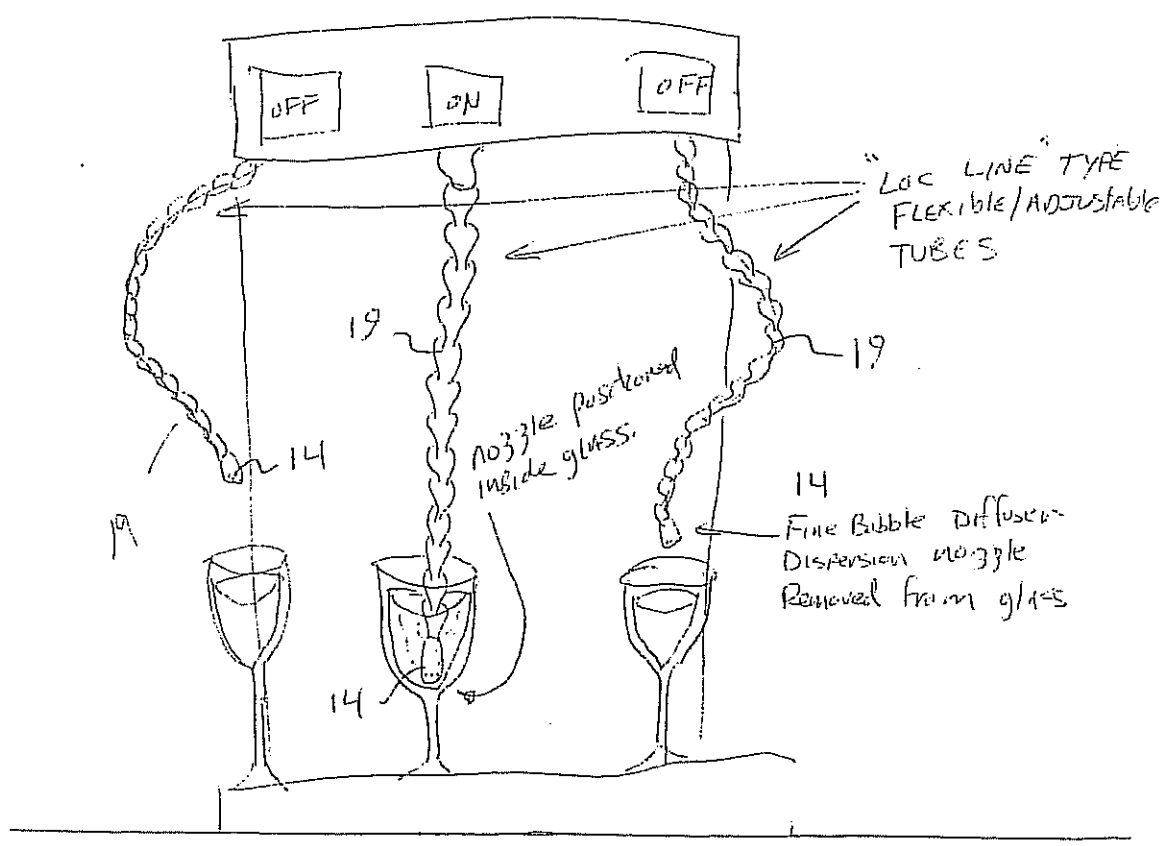


Figure 7

Metered Distribution O₂ OXY.VIN

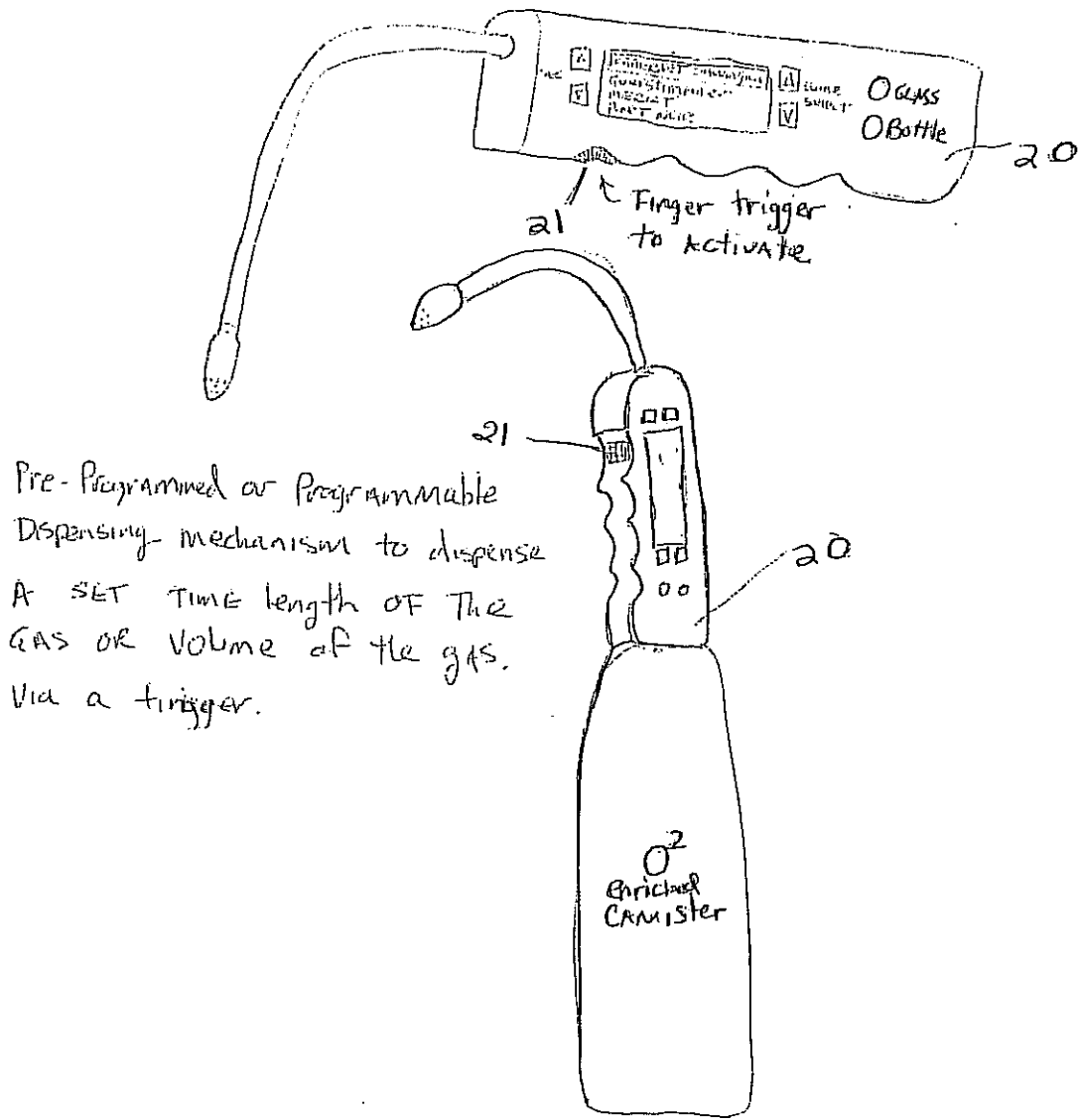


Figure 8

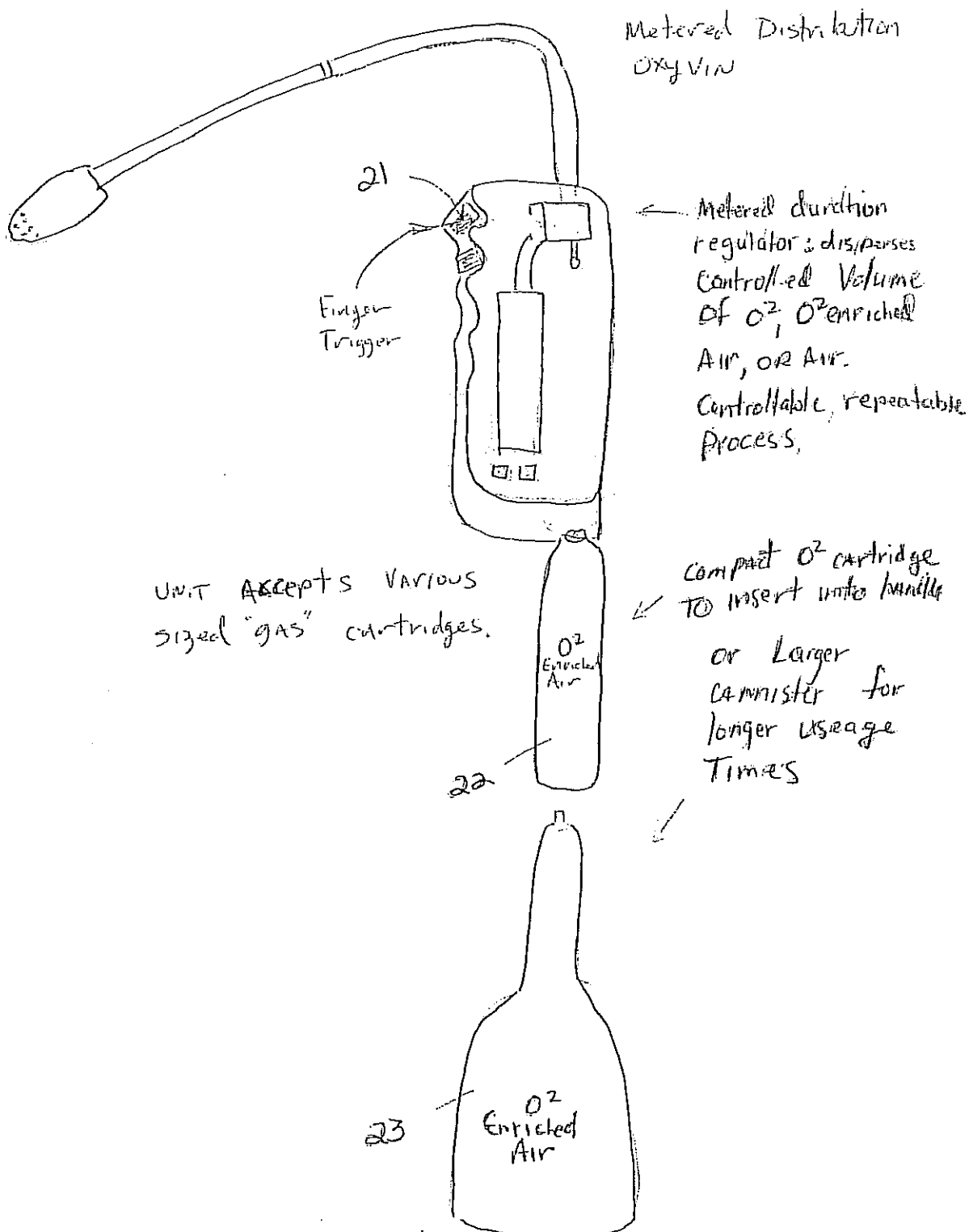
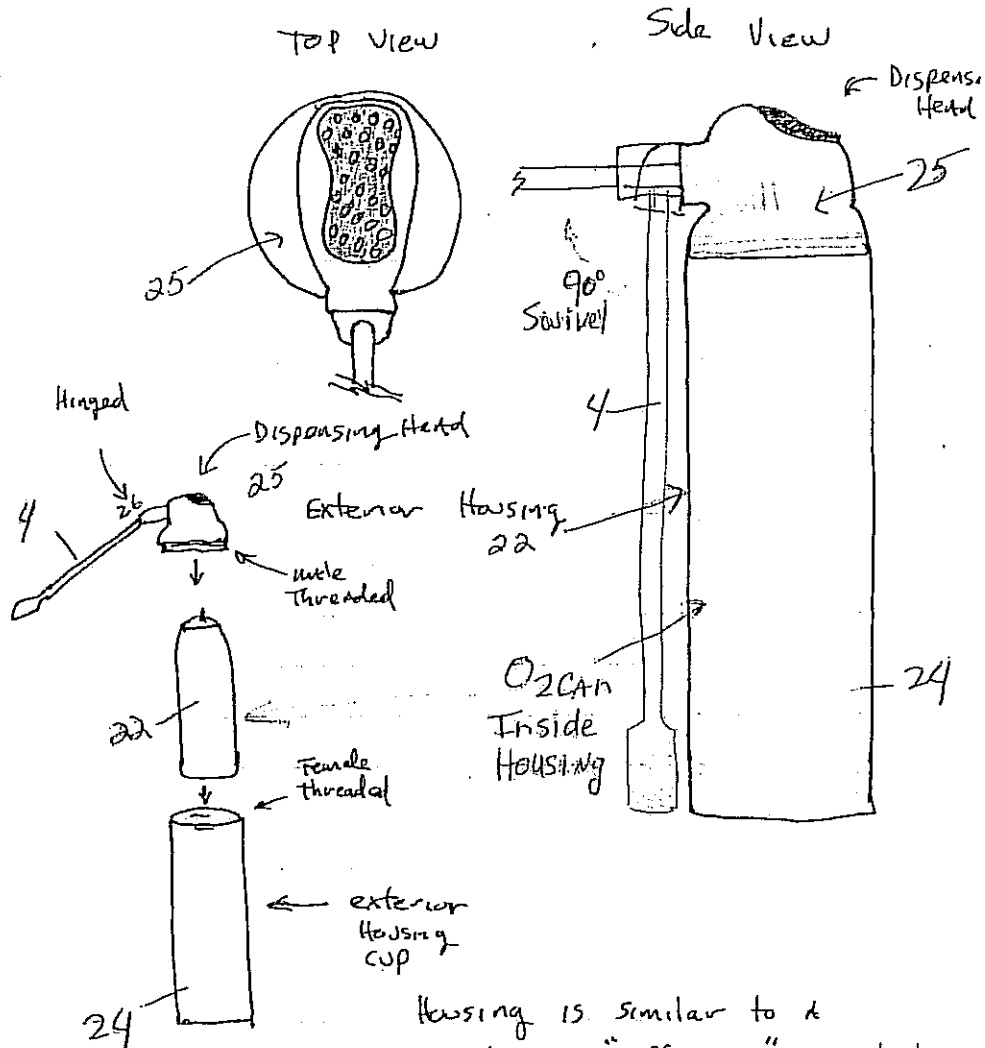


Figure 9

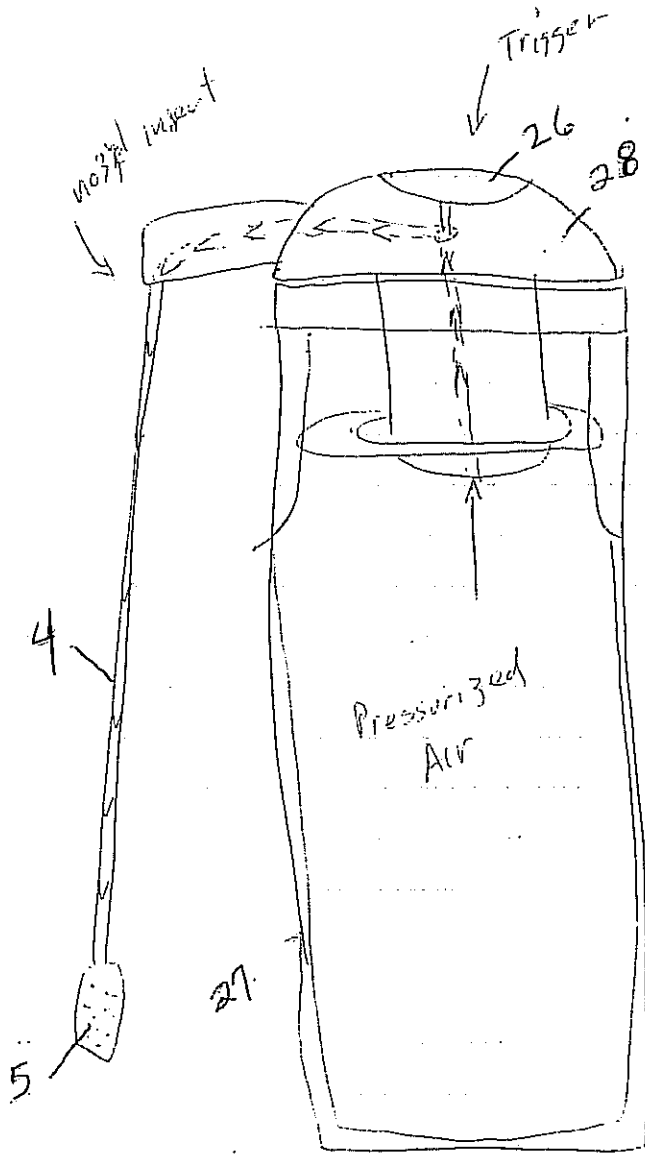
OxyVin Housing to Hold & Dispense Cuts



Housing is similar to a Travel mug "Coffee cup" in which the O₂ canister is contained. The dispensing head screws onto the exterior housing cup

Figure 10

Hand Pump-UP AIR USE OXYVIN

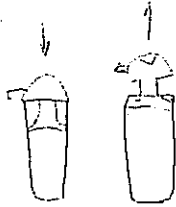


Pressure Pump Vessel Device

① hand pump air pressure into vessel.
(Pump by hand)

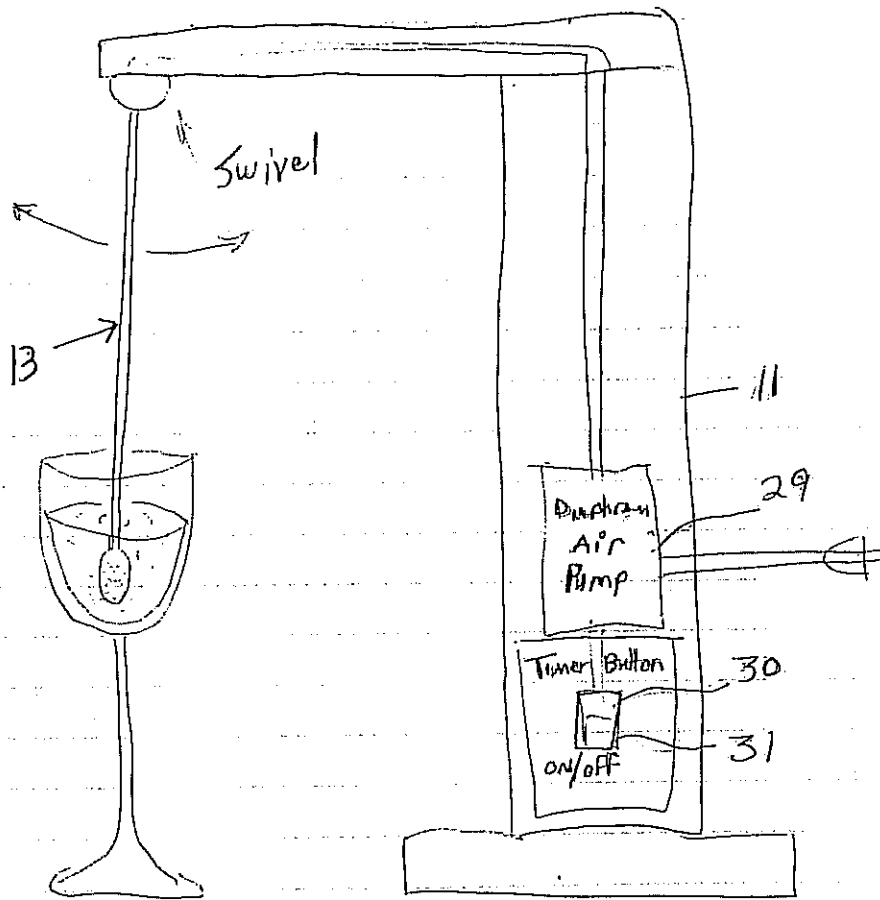
② dispense pressure air through fine bubble diffuser nozzle.

uses the 21% Oxygen in air. Dispense through fine bubble diffuser nozzle and puts O₂ into greater surface contact with the wine than other methods.



Pump up & down by hand to pressurize vessel. Release pressurized air through nozzle by depressing dispensing trigger.

Figure 11



Pumps A set time/volume of Air
 AT Push of Button. Directs Air through
 Fine Bubble Diffuser Nozzle

Stationary counter top unit drawn. Hand
 Held, plug in / battery operated device implied.
 Figure 12

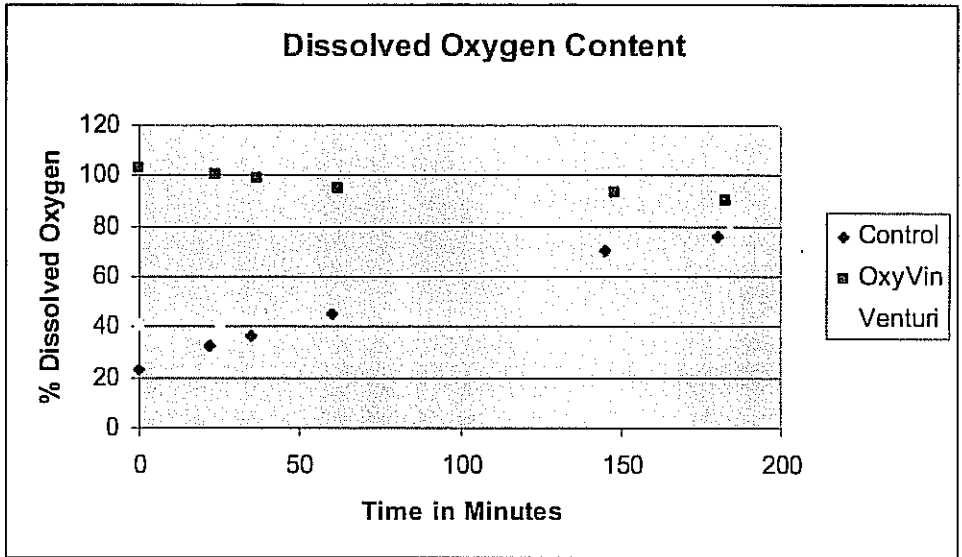


Figure 13

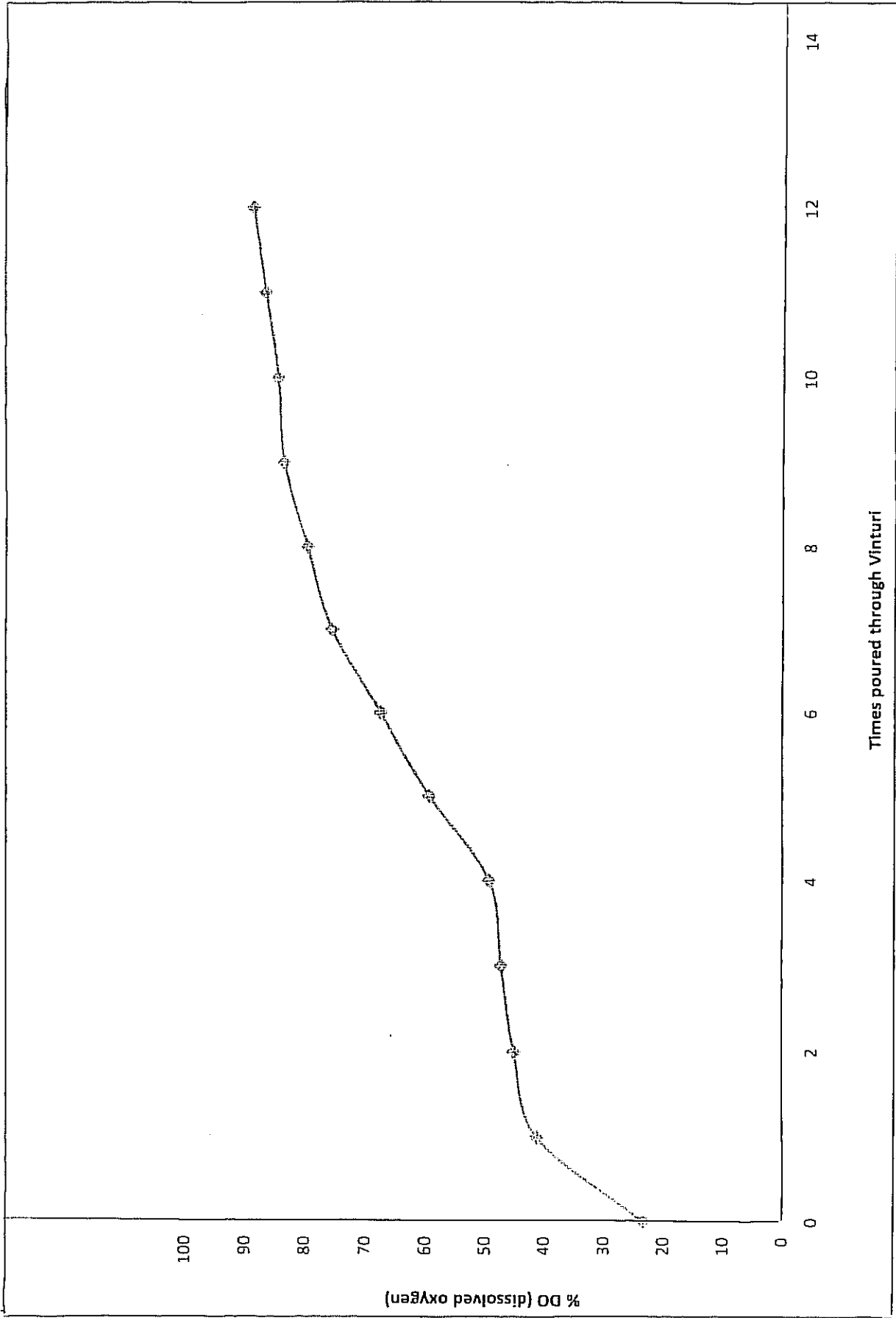


Figure 14