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OXYGEN INHALING ASSEMBLY

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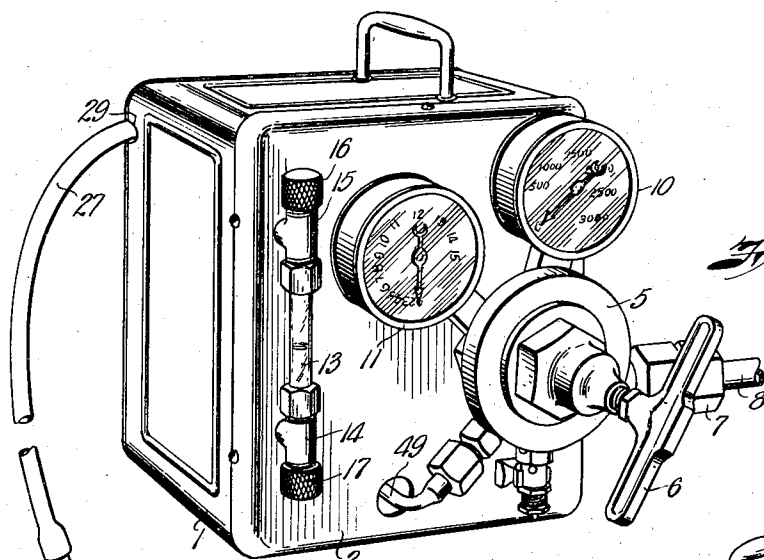


Fig. 1.

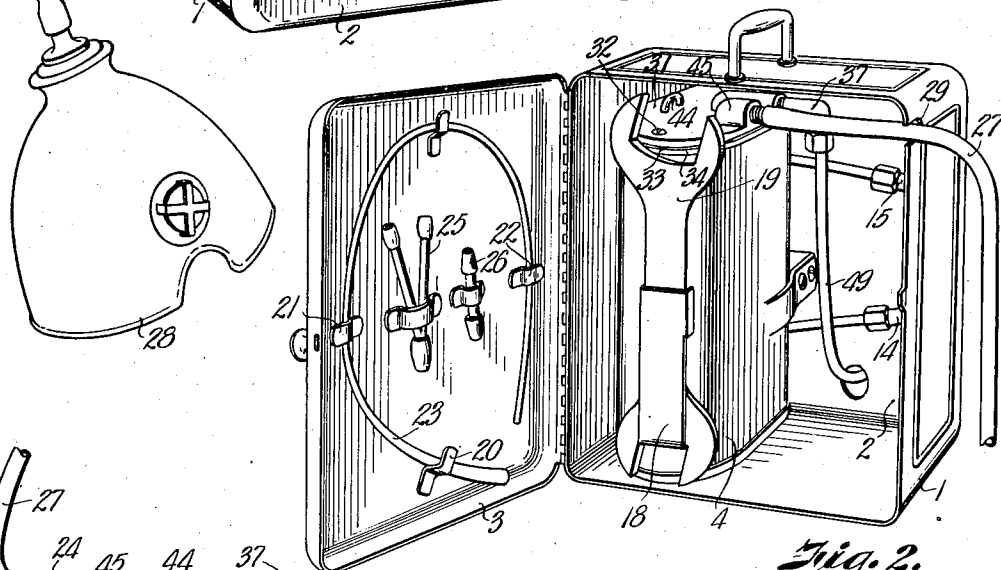


Fig. 2.

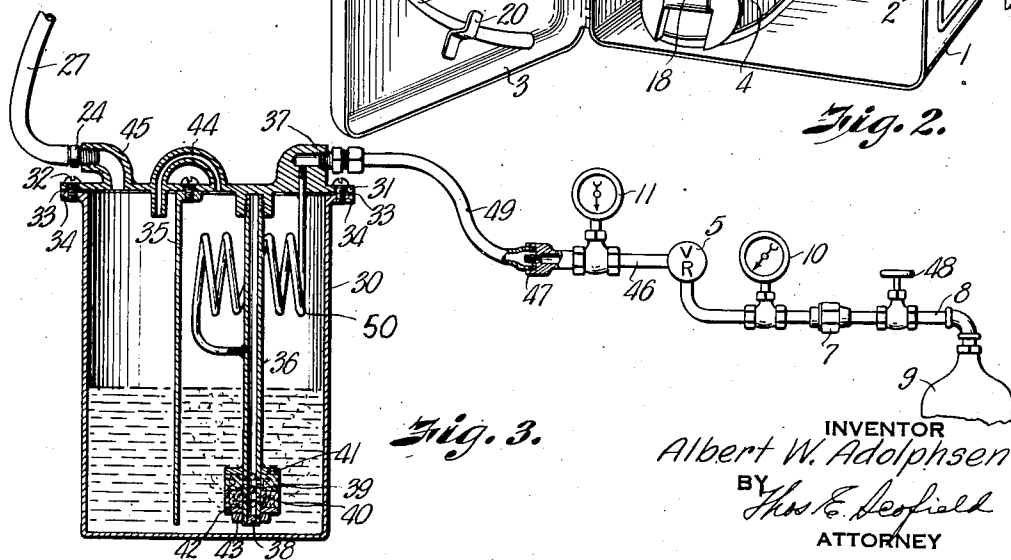


Fig. 3.

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OXYGEN INHALING ASSEMBLY

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3 Claims. (Cl. 128—185)

My invention relates to an oxygen inhaling assembly, and more particularly to an assembly adapted to be used for supplying oxygen to patients in need of the same, as, for example, those suffering from pneumonia.

It has long been the practice to supply patients needing oxygen the same from cylinders of the gas in highly compressed state through a suitable reducing valve. The oxygen in expanding through the reducing valves becomes very dry and it has been suggested to humidify the oxygen before allowing the patient to breath the same.

One object of my invention is to provide a handy assembly which is adapted to be connected to a cylinder of compressed oxygen for supplying oxygen at any desired rate to the patient.

Another object of my invention is to provide a novel assembly for supplying oxygen to a patient in need of the same through a reducing valve and a humidifying construction.

Other and further objects of my invention will appear from the following description.

In the accompanying drawing which forms part of the instant specification and is to be read in conjunction therewith, and in which like reference numerals are used to designate like parts in the various views:

Fig. 1 is a perspective view of my assembly viewed from the front.

Fig. 2 is a perspective view of my assembly viewed from the rear with the door of the housing open.

Fig. 3 is a diagrammatic view with parts in section showing my assembly.

Referring now to the drawing, I provide a housing 1 which may be made of any suitable material such as sheet metal or the like. The housing is provided with a face plate 2 and a door 3. Within the housing is a humidifier 4. Outside the face plate 2 is mounted a reducing valve 5 controlled by handle 6. A connecting union 7 is adapted to make connection through pipe 8 with a cylinder of compressed oxygen 9. A gauge 10 is adapted to register the pressure of the compressed oxygen. A gauge 11 is calibrated in liters per minute flow of the gas passing through the reducing valve 5. A gauge glass 13 is also visible outside the panel 2 and indicates the amount of water within the humidifier 4. The gauge glass is held between a lower fitting 14 and an upper fitting 15. The fitting 15 is T-shaped. The upper portion of the T is closed with a cap 16 through which the humidifier may

be filled with the desired amount of water. The lower gauge glass fitting is likewise T-shaped and provided with a cap 17 adapted to be removed when it is desired to drain water from the humidifier. A spring member 18 is adapted to hold a wrench 19 available for instant use when it is desired to connect the unit to a cylinder of compressed oxygen. Clips 20, 21 and 22 are secured to the door 3 for holding a rubber catheter 23. Likewise positioned on the rear of door 3 is single adapter 26 and double adapter 25.

Normally the humidifier 4 is connected by flexible tube 27 to a breathing mask 28. A notch or reentrant portion 29 is provided in the housing 1 for the passage of the tube 27 when the device is in use. The breathing mask may be removed and a catheter or catheters may be substituted as desired by means of adapters 25 or 26. When not in use the tube 27 and mask 28 are stored within the housing 1 which is of sufficient size to house both the humidifier and the breathing mask.

The humidifier 4 comprises a housing 30 provided with a cover plate 31 fitted thereon by means of suitable fastening means such as machine screws 32. A gasket 33 is provided to make a gas-tight joint between the cover 31 and the flange 34 around the top of the casing 30. Suspended from the cover plate 31 is a baffle 35 dividing the interior of the humidifier into two compartments. The baffle terminates short of the bottom of the casing 30 to permit water on both sides of the baffle to assume a level. A pipe 36 is suspended from the cover 31 as can readily be seen by reference to Figure 3. The bottom of the pipe is closed by a plug 38 and is provided with a plurality of holes 39. Surrounding the holes are a plurality of filter washers 31. The washers are held in place by an upper flange 41 which is brazed or otherwise secured to the pipe 36 and a washer 42. A nut 43 is threaded about the lower end of pipe 36 and is adapted to clamp the washers 40 between the upper flange 41 and the metallic washer 42. The pipe 36 acts as a trap and into it is led the oxygen by means of a pipe 50. The upper end of pipe 50 is secured to the inlet fitting 37. The other end of pipe 50 communicates with the interior of pipe 36 at about the middle thereof as can readily be seen by reference to Figure 3. Pipe 50 is formed in the shape of a coil intermediate its ends. The two compartments of the humidifier are interconnected by means of a duct 44. The eduction fitting 45 is threaded to receive a member 24 to which the eduction tubing 27 is connected. The

water level maintained within the humidifier is below the point at which pipe 50 communicates with pipe 36. The purpose of the arrangement is to insure that, if the humidifier becomes inverted or upset for any reason accidentally that water will not run out through the oxygen connection into the reducing valve or oxygen bottle.

In use, a bottle of oxygen 9 is connected by means of a pipe 8 having shut-off valve 48 to the assembly, the connection being made through union 7. The gauge 10 indicates the pressure of the oxygen within the cylinder 9. The reducing valve 5, which is controlled by handle 6, reduces the pressure of the oxygen to any desired amount, and the oxygen at reduced pressure flows into pipe 46 which is connected through an orifice 47 to a pipe 49, which in turn leads to the induction fitting 37 of the humidifier. The orifice 47 is of such size that gauge 11 which measures the pressure existing within pipe 46 may be calibrated in units of volume of gas flowing per unit of time. The gas under reduced pressure flows through induction fitting 37, through pipe 50 into pipe 36, through pipe 36, out through holes 39 and thence through the interstices of the felt of washers 40. The washers disseminate the gas through the water. The washers themselves become saturated with water, enabling intimate contact between the gas and the water. This saturates the oxygen with moisture. As the humidified oxygen bubbles upwardly through the water, some free water will be entrained in the gas. In passing through duct 44, which is curved and hence acts as a separator, free water will be separated and fall by gravity into the second compartment of the humidifier. The humidified oxygen will flow out through induction connection 45 and thence to the patient. It will be observed that I have accomplished the objects of my invention. I have provided a handy oxygen inhaling assembly adapted to be

connected directly to a cylinder of compressed oxygen whereby the gas in the cylinder may be reduced to proper pressure and humidified before passing to the patient.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of my claims. It is further obvious that various changes may be made in details within the scope of my claims without departing from the spirit of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

1. In an inhaling assembly, a humidifier including in combination a casing adapted to contain water, said casing having a cover member, a pipe having a closed upper end supported from said cover member, the lower end of said pipe being disposed beneath water in said casing and formed with an aperture, porous material surrounding said aperture, means providing communication between a source of gas and said pipe intermediate its ends, said communicating means being provided with a water trap and means communicating with said casing for withdrawing the humidified gas.

2. An inhaling assembly as in claim 1 in which said water trap is a coiled pipe.

3. An inhaling assembly as in claim 1 in which said casing is provided with a partition dividing said casing into two chambers, means providing communication between said chambers above the water level therein, and means below the water level providing communication between said chambers.

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