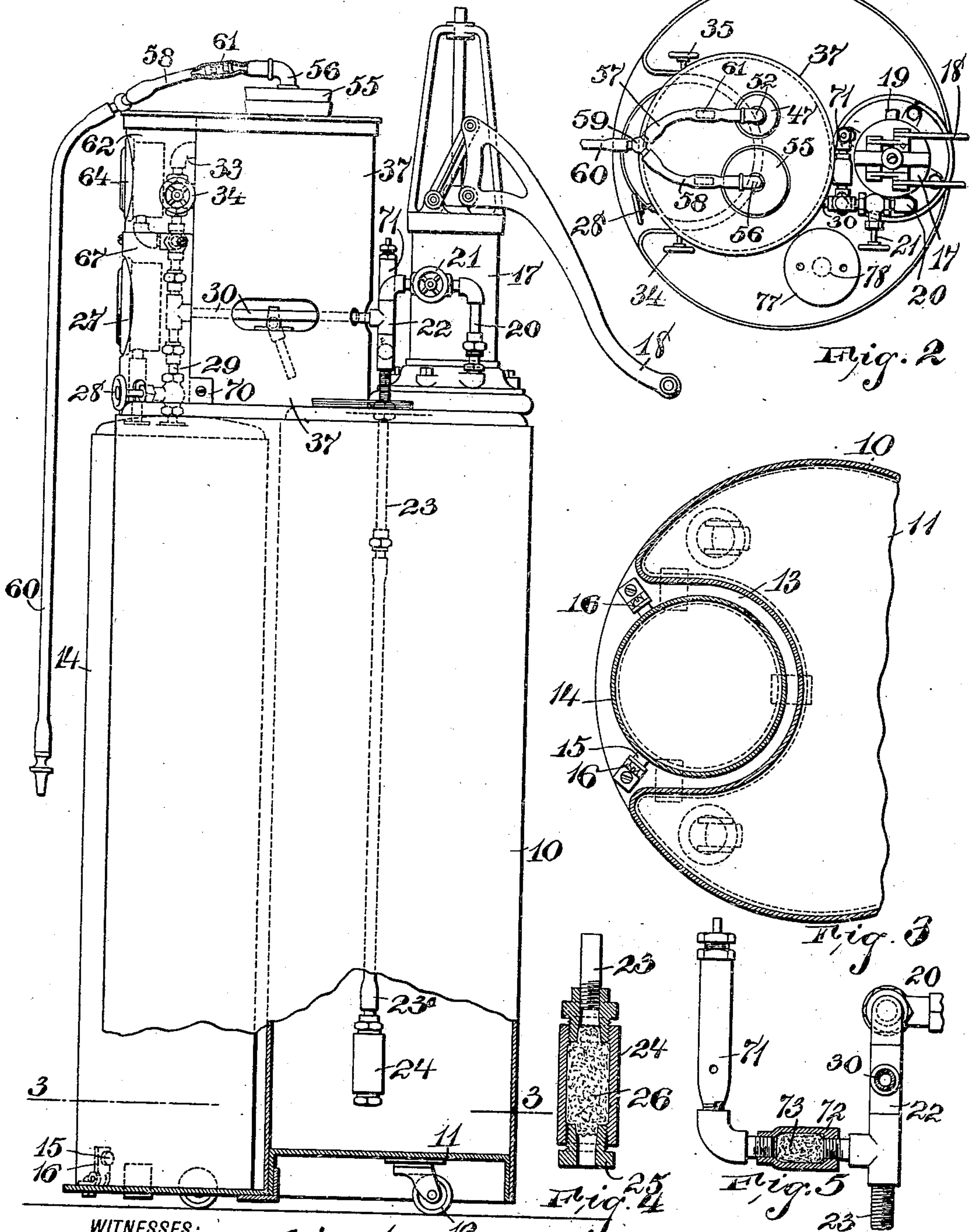


G. VON ACH.
TANK FOR ADMINISTERING OXYGEN.
APPLICATION FILED AUG. 5, 1909.

946,307.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1.



WITNESSES:
E. A. Pell
M. A. Johnson.

Fig. 1

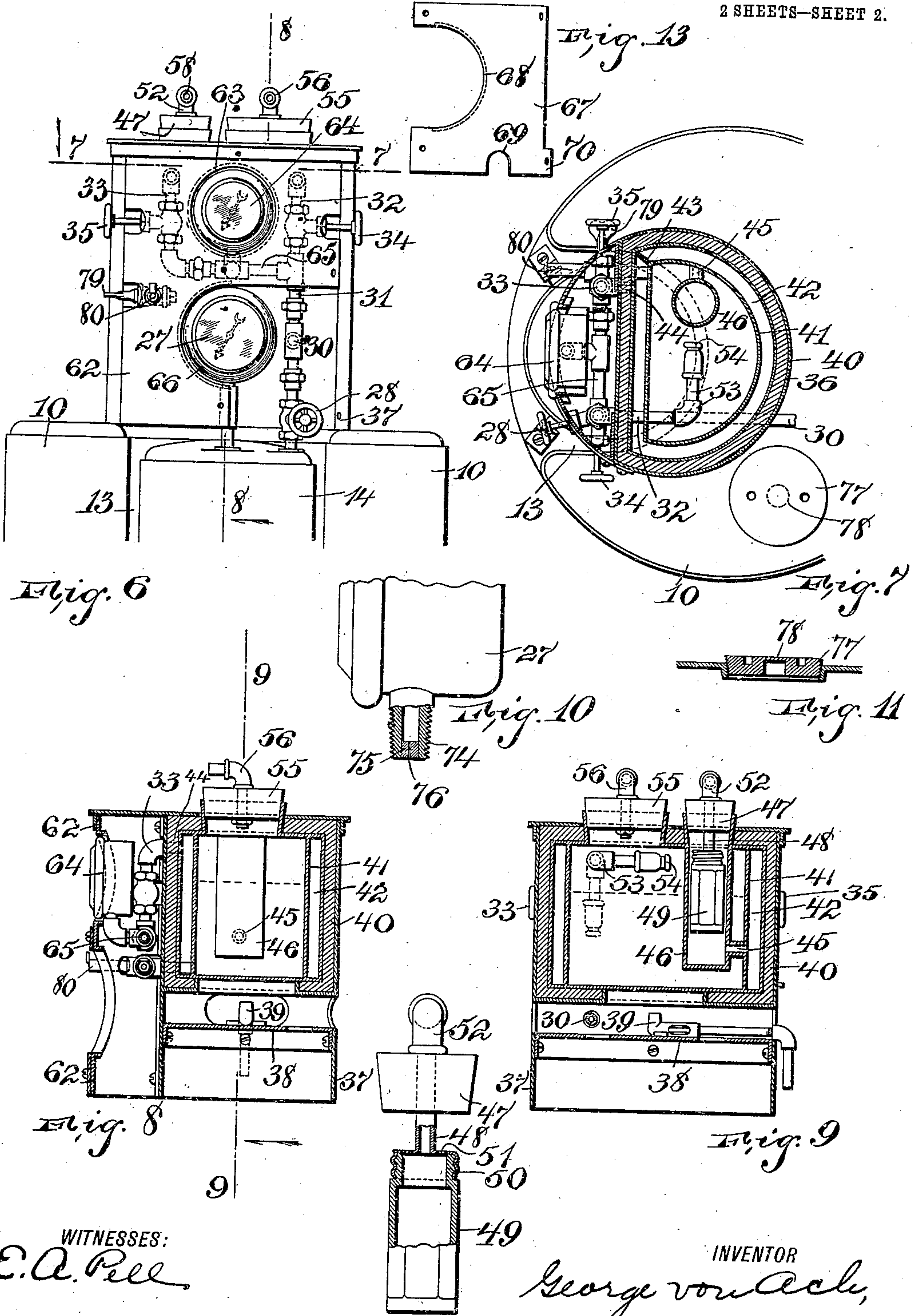
INVENTOR
George von Ach,
BY
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ATTORNEY

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UNITED STATES PATENT OFFICE.

GEORGE VON ACH, OF NEWARK, NEW JERSEY.

TANK FOR ADMINISTERING OXYGEN.

946,307.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed August 5, 1909. Serial No. 511,333.

To all whom it may concern:

Be it known that I, GEORGE VON ACH, citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Tanks for Administering Oxygen; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to an improved apparatus for administering oxygen or similar gases, and particularly refers to a device embodying means for heating or moistening the gas to be administered so that it can be given either cold or warm, dry or moist.

Another object of the invention is to provide an apparatus for diluting the oxygen or similar gas to be administered and preferably diluting it with atmospheric air which is purified on its entrance to the apparatus, and thus the gas can be administered steadily and it will not be necessary for a patient to halt when taking in oxygen, as at present necessary, to take inhalations of air for diluting the oxygen in the lungs.

The invention further provides for forcing the atmospheric air into a tank into which the oxygen can also be admitted from time to time, and having pipe connections for regulating the admission of air or gas to the tank and from the tank.

The device further embodies a supplemental tank through which the gas to be administered is passed after it is diluted, and it can be passed through the supplemental tank to moisten it or to heat it, or one or both of these steps can be omitted, that is, it can be moistened and not heated, or it can be heated and not moistened, and it can also be delivered neither heated nor moistened.

The device further embraces two outlet pipes which lead to the administering pipe, one of the outlet pipes having a connection with the moistening portion of the supplemental tank, and the other outlet pipe having a connection with the heating part of

the device, and each of them is provided with a check valve so that when one is being used the pressure will close the valve in the other, and there will be no return passage to the supplemental tank as would be the case if these check valves were omitted.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the apparatus complete. Fig. 2 is a top view of Fig. 1, and Fig. 3 is a horizontal section taken on line 3, 3, in Fig. 1 slightly enlarged and broken away. Fig. 4 is a section of a bottom of an outlet pipe from the tank, and Fig. 5 illustrates the connection of a safety valve with the outlet pipe from the tank. Fig. 6 is a front view of the upper portion of the apparatus. Fig. 7 is a section on line 7, 7, in Fig. 6. Fig. 8 is a section on line 8, 8, in Fig. 6, and Fig. 9 is a section on line 9, 9, in Fig. 8. Fig. 10 illustrates the connection of gages with the piping in the apparatus. and Fig. 11 illustrates a plug having a weakened portion to provide a place for breakage in case of excess pressure. Fig. 12 is a section of one of the plugs in the supplemental tank showing the means for suspending a receptacle containing a healing drug or similar substance to be conveyed out with the oxygen or other gas. Fig. 13 is a portion of the cover removed from the front of Fig. 6.

The invention comprises a tank 10 which is provided with a bottom 11 on which are mounted the casters or rollers 12 providing for the easy moving about of the apparatus. The tank is substantially circular on its outside surface and is provided on one side with a recess 13, which recess extends far enough into the body portion of the tank to receive a cylinder 14, which cylinder is set into the recess 13 far enough so as not to project from the base of the apparatus, and is held in place by screws 15 arranged in pivoted clips 16. On top of the tank 10 is mounted a pump 17 which is preferably manually manipulated by means of a handle 18 and has an inlet pipe 19 whereby the pump is adapted to draw air from the atmosphere and then convey it through the pipe 20 and past the valve 21 through the

couplings 22 and through the pipe 23, which pipe extends to near the bottom of the tank and has a cylinder 24 secured to its end, which cylinder has a plug 25 serving to hold
 5 a sponge or other absorbent 26 in the cylinder 24. The tank is filled to the desired height with lime preferably, but I can also use a caustic soda or charcoal or other material, but lime is preferred. The air is
 10 thus purified when it is forced into the tank through its being passed through the lime which absorbs moisture and impurities. The cylinder 14 is filled with oxygen and preferably is made so as to hold about 200
 15 gallons, which would cause a 1600 pound pressure on the cylinder, and to measure the quantity in the cylinder I install a gage 27 by means of which the quantity in the cylinder is measured. The valve 28 is opened
 20 when the valve 21 is closed and the pumping has ceased, which valve 28 permits oxygen to pass from the cylinder through the pipe 29 and then through the pipe 30 into the connections 22 and down through the
 25 pipe 23 through the cylinder 24 and into the tank where it is diluted with the air forced in by the pump 17, and the proper mixture is arrived at by judging the amount of oxygen that is passed out of the cylinder
 30 which can be arrived at by reading the gage 64. Then the valve 28 is closed and the valve 21 is kept closed and the pressure from the tank of the diluted oxygen is exerted through the pipe 23 and the pipe 30 into
 35 the vertical pipe 31 which has two branches 32 and 33 which are provided with valves 34 and 35 respectively, these branches extending upward and leading into a supplemental tank 36 mounted on the top of the
 40 tank and bridging the recess in which the cylinder sets. The supplemental tank is supported by its casing 37 which has a horizontal plate 38 to support a gas or other suitable burner 39 to heat the supplemental
 45 tank. The supplemental tank has an inclosing sheathing 40 which forms the outer tank and within which is placed an inner tank 41 forming a space 42 between the outer and inner tank, and having a suitably placed partition 43. The space 42
 50 forms a heating chamber, but is used when the oxygen or other gas is needed warm but dry, the gas passing through the valve 35 and the pipe 33 by reason of the valve 34 being kept shut. This pipe 33 passes into
 55 the heating chamber 42 at 44 and the gas is forced to circulate around the inner tank 41 by reason of the partition 43 forcing it around so that it passes out through the outlet 45 into the shell 46, this being shown
 60 more particularly in Fig. 9. The top of the shell 46 is adapted to receive a plug 47, which plug forms a closure for the shell and has suspended therefrom an outlet pipe 48

to which is attached a bottle 49 shown in 65 Fig. 12, the bottle being arranged to receive a cap 50, which cap is attached to the outlet pipe 48, and the cap has a small opening 51 into which the oxygen passes from within the shell 46 and then out through the outlet 70 48 and through the coupling 52. The bottle 49 is provided to contain alcohol or any other similar healing agent, and can be thus taken in with the oxygen by a patient, thereby providing a ready means for carrying 75 along such healing drug with the oxygen for inhalation by the patient.

When it is desired to have the oxygen administered moist, the valve 35 is shut off and the valve 34 is opened, which permits the 80 oxygen or other diluted gas to pass through the pipe 32 and through the swiveled connection 53 to the outlet 54. This swiveled connection permits the oxygen or other air to be only slightly moistened when the pipe is 85 raised to the position shown in full lines in Fig. 9, or more saturated by moisture when it is dropped to the dotted outline shown in said figure. This outlet 54 and the swiveled connection are arranged inside the inner 90 tank 41, which inner tank is adapted to contain water and is arranged directly above the burner 39 so that the water can be kept warm, or it can be made to boil. The oxygen from the inner tank passes out through 95 the large plug 55, which plug has the outlet pipe 56 emerging therefrom. Each of the plugs 47 and 55, as will be seen from Fig. 2, has an outlet pipe 57 and 58 respectively which are brought together in the connection 59 connecting these two outlet pipes to 100 the administering pipe 60. Each of the outlet pipes has a check valve 61 arranged near the plug through which the pipe projects, these check valves preventing any return 105 through their respective outlet pipes so that when one outlet pipe is in use, the other one is cut off from its connection with the administering pipe.

The casing of the supplemental tank has a 110 front 62 to fit over the front of the supplemental tank and has an opening 63 therein through which the gage 64 can be seen, this gage being connected with the outlet pipes at any suitable place, but preferably at the 115 transverse pipe 65 connecting the pipes 32 and 33 so that when the valve 28 is closed and the valve 21 is opened, the air under pressure is forced into the tank by means of the pump 17, and therefore the quantity of 120 air can be determined. The cover 62 has a recess 66 to permit the gage 27 to show, and a lid 67 with a recess 68 is adapted to fit over the place left open in Fig. 6. The cover 67 has a recess 69 to permit the projection of the 125 handle of the valve 28, and the lid has a lip 70 which is adapted to be screwed to the casing 37 to fasten it in place. The connections

22 between the pipe 20 and the pipe 23 are provided with a safety valve 71 which takes care of excess pressure in the tank 10 and is provided with a cylindrical connection 72 adapted to hold a sponge or other absorbent 73, the function of this sponge being to prevent lime-dust from passing out into the safety valve 71 to clog it. The absorbent or sponge 26 in the cylinder 24, at the base of the pipe 23, is also installed to prevent any dust from the lime passing out with the oxygen. The gage 27 is connected to the pipe on which it is mounted by the usual screw connection 74, and a plug 75 with a slight opening 76 is placed in the pipe connection so that the admission of fluid under pressure is slightly retarded so that quick fluctuations or variations are not readily transmitted to the gage, and the needle is not apt to continually vibrate, but has a more steady motion than if the pipe were more freely opened.

In the tank 10 is arranged a plug 77 which is adapted to screw into the tank and has a thin or weakened portion 78 which is liable to break under excess pressure on the tank. The inner tank 41 can be filled through the large plug 55 and can be emptied through the outlet pipe 80 which is controlled by the valve 79. The plug 77 is preferably fastened and unfastened by means of a spanner wrench or a key and is made large enough to fit in a recess that can be used as a hand-hole.

The inner and outer tanks of the supplemental tank are surrounded by a layer 81 of asbestos or similar material which does not conduct heat, and is adapted to confine the heat to the tanks, but a space directly above the burner 39 is left without the asbestos lining or sheathing so as to readily heat the contents of the inner tank. The pipe 23 is preferably made with a length 23^a of material which is slightly flexible, but tough, and is expected to give slightly if the tank is turned over and the weight of the lime comes on the pipe with any force so that the pipe 23 will not be broken off up near its connection with the top of the tank, which might be the case if the pipe 23 were rigid for its full length.

The outlet pipe 54 is provided with a check valve so that in case the outlet 54 is underneath the surface of the water any suction on the dispensing pipe will not cause a siphoning of the water from the tank into the lime in the main tank 10, and thus ruin the lime. The double passage of the air through the lime or similar absorbent and air purifying material in the tank 10 makes this air, when it is in the tank, rich in oxygen, even before the oxygen from the cylinder 14 is admitted to the tank. This air, when it first enters the tank, is forced through the lime or similar material, which draws the carbon dioxide and the moisture and poisons, which are

present in small quantities in the atmosphere, from the air admitted through the pipe 23. On the return of the air through the pipe 23, on its way to the supplemental tank, it is again passed through the lime, and when it emerges from the tank 10 it is very rich in oxygen, both through the purifying by the lime and through its being diluted by the pure oxygen from the cylinder 14.

The pipe 30, which connects the cylinder with the tank, along with the valve 28 is adapted to become very cold when oxygen under great pressure is released from the cylinder 14, and to prevent freezing the pipe 30 runs through the space between the inner and outer tanks of the supplemental tank and the platform 38 in the tank so that the pipe 30 becomes heated from the burner 39, and the pipe 30 being hot, transmits enough heat to the valve 28 and the pipe connection to the cylinder to prevent the above mentioned freezing.

Having thus described my invention, what I claim is:—

1. An apparatus for administering oxygen or the like comprising a tank substantially cylindrical on the outside, and having a substantially circular recess in one side, a cylinder to fit in the recess, pipe connections between the cylinder and the tank, means for forcing air into the tank whereby the oxygen in the tank is diluted, and means for conveying the diluted oxygen from the tank.

2. An apparatus for administering oxygen comprising a tank, a pump having connections with the tank whereby it is adapted to pump air in the tank, a cylinder adapted to contain oxygen under pressure, pipe connections from the cylinder to the tank whereby some of the oxygen is conducted to the tank and diluted, and means for conducting the diluted oxygen from the tank.

3. An apparatus for administering oxygen comprising a tank, a pump on the tank, pipe connections between the pump and the tank having a valve therein, a cylinder adapted to contain oxygen under pressure, pipe connections between the tank and the cylinder, the pipe connections from the pump to the tank and from the cylinder to the tank having a pipe common to both of them to enter the tank, said common pipe extending to near the bottom thereof, the tank being adapted to contain an air purifying substance, and an outlet pipe having connections with the pipe common to the inlet pipes whereby the diluted oxygen in the tank is conveyed therefrom.

4. An apparatus for administering oxygen comprising a tank, means for forcing air into the tank, a cylinder for containing oxygen under pressure, pipe connections between the cylinder and the tank, a valve in the pipe connection, a supplemental tank

having heating means therein, a pipe leading from the pipe connection of the tank and the cylinder between the tank and the valve in the pipe connections, said pipe being connected with the supplemental tank whereby the oxygen when diluted can be admitted to the supplemental tank, and means for conducting the oxygen from the supplemental tank.

5. An apparatus for administering oxygen or the like comprising a tank, means for regulating the admission of air to the tank, a cylinder adapted to contain oxygen under pressure, a pipe projecting from the top of the tank and extending to near the bottom thereof, air purifying material in the tank, a pipe connecting the projecting end of the pipe in the tank with the cylinder, a valve in the last mentioned pipe, and a pipe leading from the last mentioned pipe between the valve therein and the tank, a supplemental tank into which the second pipe leads, heating means in the supplemental tank, and means for conducting the oxygen from the supplemental tank.

6. An apparatus for administering oxygen comprising a tank, a cylinder adapted to contain oxygen under pressure, a vertical pipe projecting from the top of the tank and extending within the tank to near the bottom thereof, a pump, pipe connections from the pump to the vertical pipe, a valve in said pipe connections, a supplemental tank, a pipe leading from the vertical pipe and having a valved connection with the tank and having a valved connection with the supplemental tank, the valved connection with the supplemental tank being in duplicate, the supplemental tank consisting of an outer tank and an inner tank forming a space between them, the space having a partition therein, one of the duplicate valved connections leading to said space, a shell connected with said space, an outlet pipe on the other of said duplicate valved connection leading into the inner tank of the supplemental tank, said inner tank being adapted to contain water, an outlet pipe from the inner tank, an outlet pipe leading from said shell, a check valve in each of the outlet pipes, and a connection for leading both said outlet pipes into a single administering pipe.

7. An apparatus for administering oxygen comprising a tank, a cylinder adapted to contain oxygen under pressure, a vertical pipe projecting from the top of the tank and extending in the tank to near the bottom thereof, a cylinder open on both ends secured to the bottom of the vertical pipe, an absorbent in the cylinder, air purifying material in the tank, a manually operated pump having its inlet connected with the atmosphere, and having a valved pipe connection leading to the vertical pipe, a pipe leading

from the vertical pipe and having a valved connection with the cylinder, a supplemental tank comprising an inner and outer tank, a burner within the supplemental tank, a partition across the space between the inner and outer tank to insure the circulation of oxygen, one of the valved connections of the supplemental tank leading into said space between the tanks adjacent to the opposite side of the partition, a pipe leading from the second valved connection to the inner tank of the supplemental tank, an outlet pipe leading from the inner tank to the supplemental tank, a check valve in each of the outlet pipes, and a connection leading from the outlet pipes into a single administering pipe.

8. An apparatus for administering oxygen or the like comprising a tank, means for regulating the admission of air thereto, a cylinder for containing oxygen, a pipe from the air regulating means extending into the tank, air purifying and absorbing material in the tank through which the air is passed, a connection from the cylinder to the tank for admitting oxygen under pressure to the pipe in the tank, a valve in the connection between the tank and the cylinder, and an outlet pipe having connections with the pipe in the tank.

9. An apparatus for administering oxygen or the like comprising a tank, means for regulating the admission of air to the tank, a pipe in the tank connected with the air admission pipe and extending into the lime, a cylinder for containing oxygen under pressure, a pipe connection from the cylinder to the pipe in the tank, a valve in said pipe connection, and an outlet pipe having connections with the pipe in the tank whereby the air admitted to the tank and the oxygen admitted to the tank are passed through the lime when making their exit.

10. An apparatus for administering oxygen or the like comprising a tank, a pump on the tank having a pipe connected with the atmosphere, a pipe connected with the pump and extending into the tank to near the bottom thereof, a valve in the pipe between the tank and the pump, an air purifying material in the tank whereby the air pumped therein is submitted to a purifying process, a cylinder for containing oxygen under pressure, a pipe connecting the cylinder with the pipe projecting in the tank, a valve in the pipe extending from the cylinder to the pipe in the tank, and an outlet pipe having a connection with the pipe in the tank whereby the oxygen and purified air in the tank again pass through the purifying material in their exit.

11. An apparatus for administering oxygen or the like comprising a tank, means for regulating the admission of atmosphere

thereto, a cylinder for containing oxygen, pipe connections between the cylinder and the tank for regulating the admission of oxygen to the tank whereby the oxygen is
 5 diluted, a supplemental tank, heating means in the supplemental tank, moistening means in the supplemental tank, a valved connection passing from the tank through the moistening means in the supplemental tank,
 10 the valved connection passing from the tank to the heating means in the supplemental tank, the moistening means and the heating means having separate outlet pipes, a connection for merging the outlet pipes into a
 15 single administering pipe, and check valves in the outlet pipes.

12. An apparatus for administering oxygen or the like comprising a tank, means for regulating the admission of air thereto, a
 20 cylinder adapted to contain oxygen under pressure, a pipe from the air regulating means extending into the tank, a valved connection from the cylinder to the pipe in the tank for admitting oxygen under pres-
 25 sure to the pipe in the tank whereby the oxygen is diluted in the tank, a supplemental tank, a burner in the supplemental tank, a tank for moistening in the supplemental tank, a tank for dry heating in the supple-
 30 mental tank, a valved connection from the pipe in the main tank to the moistening tank, a valved pipe connection from the pipe in the main tank to the dry heating tank in the supplemental tank, an outlet pipe from
 35 the moistening tank, a outlet from the dry heating tank, a connection merging the two outlet pipes into a single administering pipe, and a check valve in each outlet pipe.

13. An apparatus for administering oxy-
 40 gen or the like comprising a tank, a pump on the tank having an inlet connected with the air, an outlet pipe extending from the pump to within the tank, a pipe from the air regulating means extending into the tank,
 45 a valved connection from the cylinder to the pipe in the tank for admitting oxygen under pressure to the pipe in the tank whereby the oxygen is diluted in the tank, a supplemen-
 50 tal tank, a burner in the supplemental tank, a tank for moistening in the supplemental tank, a tank for dry heating in the supplemental tank, a valved connection from the pipe in the main tank to the moistening
 55 tank, a valved pipe connection from the pipe in the main tank to the dry heating tank in the supplemental tank, an outlet pipe from the moistening tank, an outlet from the dry heating tank, a connection merging the two
 60 outlet pipes into a single administering pipe, and a check valve in each outlet pipe.

14. An apparatus for administering oxygen or the like comprising a tank, a cylinder, a pipe in the tank and projecting there-
 from, a valved connection with the pipe in

the tank for admitting air thereto, a supple- 65
 mental tank, a burner in the supplemental tank, heating means in the supplemental tank, moistening means in the supplemental tank, a valved connection from the pipe in the main tank to the heating means, a valved 70
 connection from the pipe in the main tank to the moistening means, outlet pipes from each of the moistening and heating means, a connection to merge the outlet pipes into a single administering pipe, and a pipe passing 75
 from the cylinder to the pipe in the main tank and passing adjacent to the burner in the supplemental tank whereby it is heated.

15. An apparatus for administering oxygen or the like comprising a tank, a pump 80
 having its inlet in the atmosphere, a pipe passing from the pump into the tank, an air purifying material in the tank, a supplemental tank, a burner in the supplemental tank, a moistening tank in the supplemental 85
 tank, a heating tank in the supplemental tank, a valved connection from the pipe in the main tank to the heating tank, a valved connection from the pipe in the main tank to the moistening tank, means for conduct- 90
 ing the oxygen from the heating tank or the moistening tank to an administering pipe, and a pipe passing from the cylinder and adjacent to the burner in the supplemental tank whereby the pipe is heated, said pipe 95
 then being connected with the pipe in the main tank.

16. An apparatus for administering oxygen or the like comprising a tank, a cylinder adapted to contain oxygen under pressure, a 100
 pipe connection from the cylinder to the tank, means for regulating the admission of air to the tank whereby oxygen conducted from the cylinder to the tank can be diluted, a supplemental tank comprising a casing, a 105
 burner in the casing, a tank adapted to contain water in the supplemental tank, a heating tank for dry heating in the supplemental tank, a valved pipe connection leading from the main tank to the tank containing water 110
 in the supplemental tank, a valved pipe connection from the main tank to the dry heating tank, an outlet pipe from the water tank, an outlet pipe from the dry heating tank, and means for regulating the exit of oxygen 115
 in each of the outlet pipes.

17. An apparatus for administering oxygen or the like comprising a tank, a cylinder adapted to contain oxygen under pressure, a pump for forcing air into the tank, 120
 a pipe in the tank, a valved connection from the pipe in the tank to the cylinder, a supplemental tank comprising a casing, a burner in the supplemental tank, the valved connection from the cylinder to the tank pass- 125
 ing adjacent to the burner whereby said valved connection is heated, an inner tank containing water arranged in the supple-

mental tank and arranged to be heated by the burner, an outer tank for dry heating surrounding the water tank in the supplemental tank, a valved connection from the pipe in the main tank to the dry heating tank, an outlet pipe from the water tank, an outlet pipe from the dry heating tank, and means for regulating the exit of oxygen from the outlet pipes.

18. An apparatus for administering oxygen or the like comprising a tank, a cylinder adapted to contain oxygen, a pump, a pipe in the tank, a valved connection from the pump to the pipe in the tank, a supplemental tank comprising a casing having a burner therein, a valved connection passing from the cylinder to the pipe in the tank and adjacent to the burner whereby the connection is heated, a water tank within the supplemental tank, a valved connection from the main tank to the water tank having a swiveled pipe connection with an outlet adapted to be swung into and out of the water, a check valve in the swiveled connection, a dry heating tank in the supplemental tank, a valved connection from the pipe in the main tank to the dry heating tank, an outlet pipe from the water tank, an outlet pipe from the dry heating tank, and means for regulating the exit of oxygen from the outlet pipes.

19. An apparatus for administering oxygen comprising a tank circular for the major portion of its surface, the tank having a recess therein, a cylinder adapted to hold oxygen under pressure and arranged in the recess in the tank, a single pipe in the tank, means for admitting air through the pipe into the tank, a pipe for conducting oxygen from the cylinder to the pipe in the tank, a supplemental tank bridging the recess in the main tank, a burner in the supplemental tank, a moistening tank in the supplemental tank, a dry heating tank in the supplemental tank, a pipe connection from the pipe in the main tank to the moistening tank, a pipe connection from the pipe in the main tank to the heating tank, means for controlling the passage of oxygen from the moistening tank and the heating tank, and a pipe passing close to the burner in the supplemental tank and connecting the pipe in the main tank with the cylinder.

20. An apparatus for administering oxygen comprising a tank having a recess in one side, a cylinder adapted to contain oxygen under pressure, a pump, a pipe connecting the pump with the tank, a pipe connecting the cylinder with the tank, the two pipes merging into a common pipe in the tank, a supplemental tank bridging the recess in the main tank, means for heating and moistening in the supplemental tank, means for conducting the diluted oxygen from the

main tank to the heating and moistening means, and an outlet pipe from the heating and moistening means.

21. An apparatus for administering oxygen comprising a tank, a source of supply of oxygen under pressure, connections from said source to the tank, means for forcing air in the tank to dilute the oxygen, a supplemental tank comprising a casing having a burner therein, an inner tank adapted to contain water, a valved pipe connecting the water tank with the main tank whereby the oxygen in passing from the main tank can be moistened, a heating tank enveloping the water tank, means for conducting oxygen from the main tank to the heating tank, a shell connected with the heating tank and adapted to contain a healing or similar material to be taken up by the oxygen in passing, an outlet pipe leading from the heating tank, an outlet pipe leading from the moistening tank, and means for regulating the exit of oxygen from the outlet pipes.

22. An apparatus for administering oxygen comprising a diluting tank, a source of oxygen supply connected with the diluting tank, a pump for forcing air into the diluting tank, a supplemental tank consisting of a casing, an inner tank, an outer tank, a burner placed to heat the tanks, one of the tanks being adapted to contain water, a shell in the dry tank and in communication therewith, a bottle in the shell having an opening at its top, a plug in the dry tank from which the bottle is suspended, an outlet pipe passing through the plug and communicating with the bottle, a plug in the water tank, an outlet pipe passing through the plug, means for regulating the flow of oxygen from the outlet pipes, and a pipe connection between the two tanks of the supplemental tank and the main tank.

23. In an apparatus for administering oxygen, a supplemental tank comprising a casing, a heating chamber within the casing, a burner in the heating chamber, an inner tank adapted to contain water, an outer tank enveloping the inner tank, a partition between the two tanks to form a heating chamber between them, a pipe leading into said inner tank, a valve in the pipe, a plug in the inner tank, an outlet pipe passing through and from the plug, a shell in the inner tank and having a passage connecting with the heating chamber, a plug in the receptacle, an outlet pipe passing through and from the plug in the receptacle, a bottle suspended on the outlet pipe and having an opening therein, the bottle being adapted to contain a drug to be carried along by the oxygen, and a pipe leading into the heating chamber.

24. In an apparatus for administering oxygen, a supplemental tank comprising a

casing, a heating chamber within the casing,
a burner in the heating chamber, an inner
tank adapted to contain water, an outer
tank enveloping the inner tank, a partition
5 between the two tanks to form a heating
chamber between them, a pipe leading into
said inner tank, a swiveled end on the said
pipe whereby its outlet can be swung into
and out of the water in the tank, a check
10 valve in the swivel connection, a valve in the
pipe, a plug in the inner tank, an outlet
pipe passing through and from the plug, a
shell in the inner tank and having a pas-
sage connecting with the heating chamber,

a plug in the receptacle, an outlet pipe 15
passing through and from the plug in the
receptacle, a bottle suspended on the outlet
pipe and having an opening therein, the
bottle being adapted to contain a drug to be
carried along by the oxygen, and a pipe 20
leading into the heating chamber.

In testimony, that I claim the foregoing,
I have hereunto set my hand this 3rd day
of August 1909.

GEORGE VON ACH.

Witnesses:

WM. H. CAMFIELD,
E. A. PELL.