

W. F. Z. DESANT.

APPARATUS FOR PRODUCING ARTIFICIAL RESPIRATION.

No. 514,448.

Patented Feb. 13, 1894.

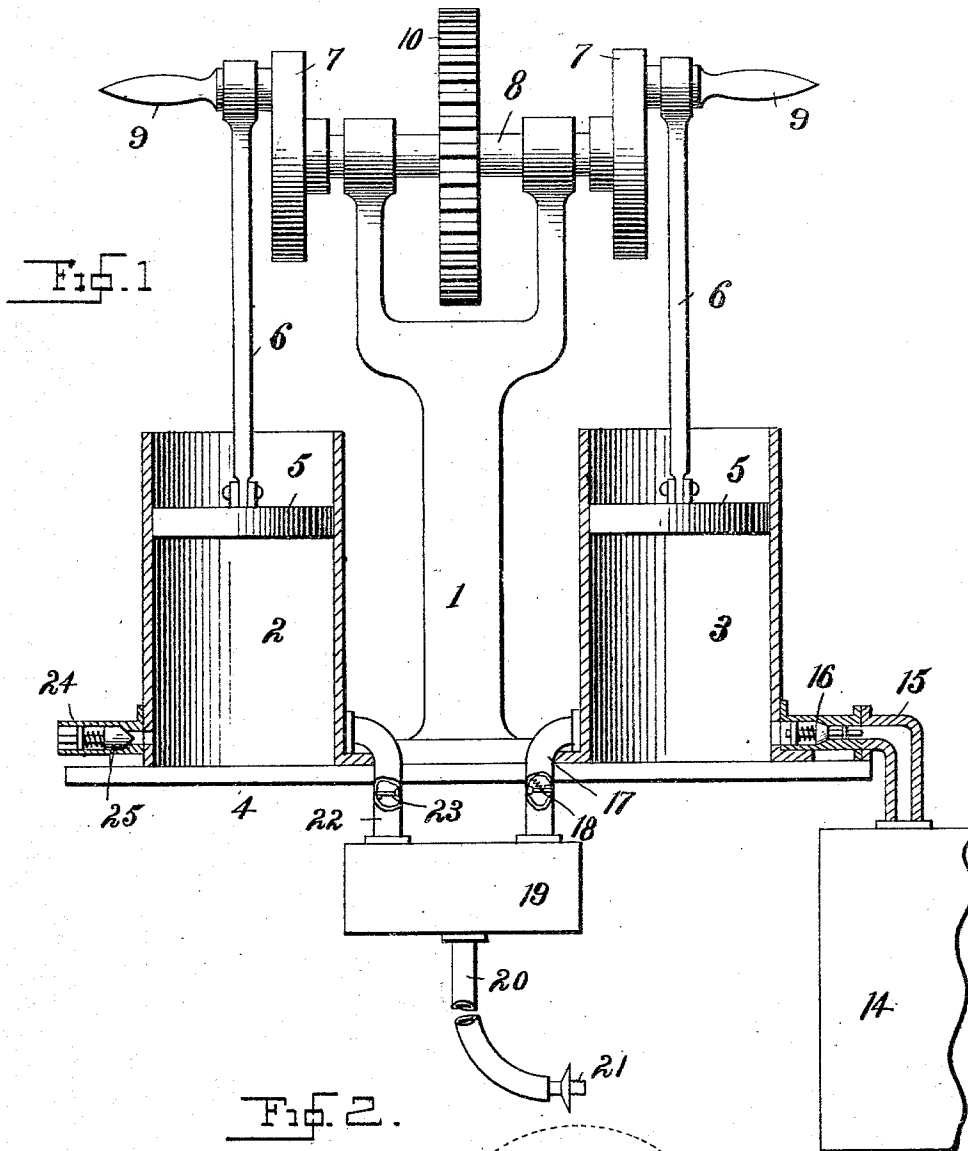
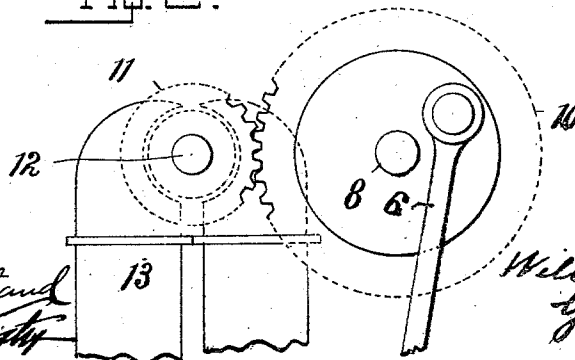


FIG. 2.



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(No Model.)

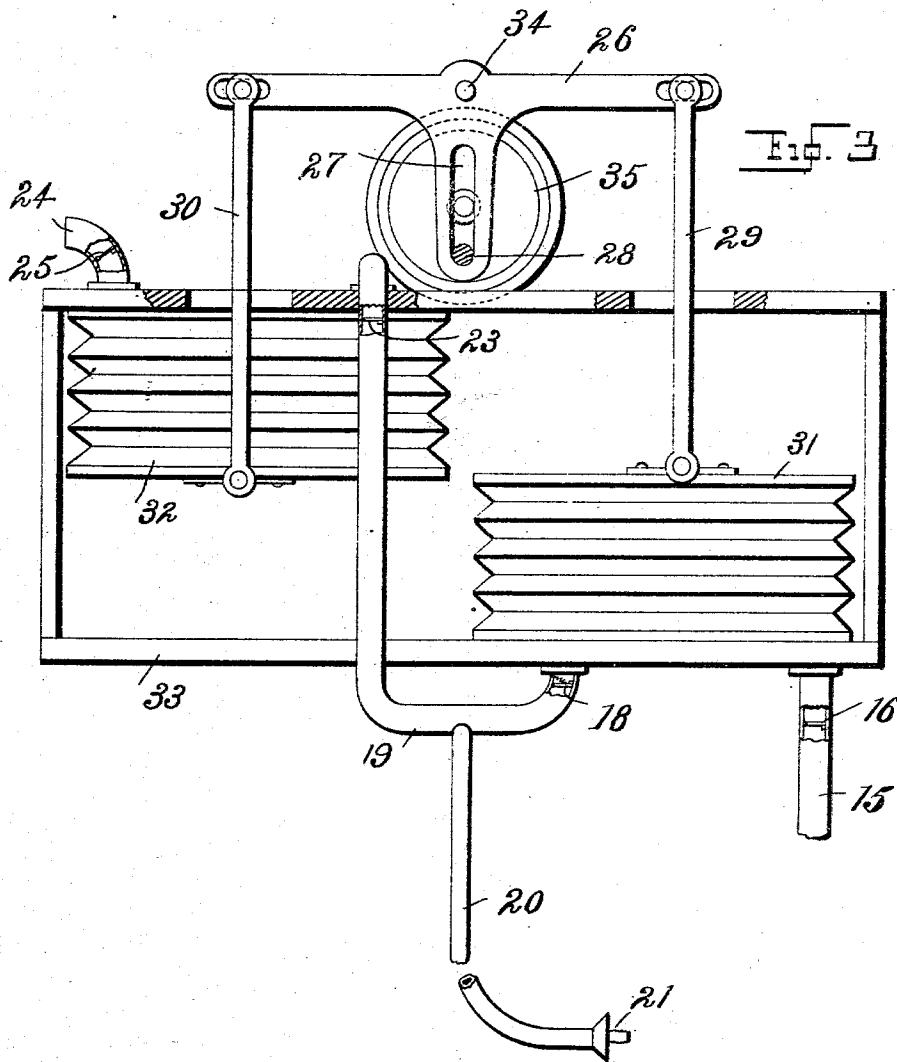
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PRODUCING ARTIFICIAL RESPIRATION.

SPECIFICATION forming part of Letters Patent No. 514,448, dated February 13, 1894.

Application filed April 7, 1893. Serial No. 469,444. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. Z. DESANT, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful improvements in Apparatus for Producing Artificial Respiration; 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.

My invention consists of a simple apparatus for forcing fresh air or any desired mixture of oxygen, ozone or other gases into the lungs of a patient and withdrawing the contents of said lungs alternately so as to produce artificial respiration.

In the accompanying sheet of drawings, Figure 1, is a side view and partial section of my preferred form of apparatus. Fig. 2, is a detailed view showing the method of operating the apparatus by an electric or other motor. Fig. 3 shows a modification.

Throughout the drawings like reference figures refer to like parts.

1 is the main frame of the double pump which is one form of my invention. This pump has two cylinders 2 and 3, mounted on the base 4. These cylinders have pistons 5, operated by the connecting rods 6, and crank disks 7, on the shaft 8, in the usual manner. The shaft 8 is journaled in bearings on the frame 1, and the crank pins may be continued in the form of handles 9, as shown in Fig. 1, so that the pumps may be operated by hand. A gear wheel 10, on said shaft may be made to mesh with the gear 11, on the shaft 12, of an electric motor 13, or with any suitable motor, if the pump is to be run by power.

14, is a portion of a tank containing the oxygen or other gases which are to be forced into the patient's lungs. The tube 15, having an outward opening valve 16, effects communication between the tank 14, and cylinder 3. The tube 17 having a downwardly opening valve 18, effects communication between the cylinder 3, and the chamber 19. The flexible tube 20, of any desired length, terminating in the mouth piece 21, effects communication between the chamber 19, and

the mouth and consequently the lungs of the patient. The tube 22, having an upwardly opening valve 23, effects communication between the chamber 19, and the pump cylinder 2.

24, is a discharge tube from said cylinder 2, having an outwardly opening valve 25.

The operation of my invention is clear from the above description. The tank 14, being filled with the desired gas and the mouth piece 21, being placed in the mouth of the patient and the shaft 8, being operated either by the handles 9, or the gear 10, the following action of the various parts will take place: On the downward thrust of the pistons 5, the contents of the pump cylinder 3, will be forced through the valve 18, and the chamber 19, and tube 20, into the patient's lungs. The contents of the pump cylinder 2, will be forced out into the open air through the opening valve 25. On the upward stroke of the pistons 5, the valve 18, will close and the valve 16, will open filling the pump cylinder 3, with a portion of the contents of tank 14. At the same time the valve 23, will open and the contents of the patient's lungs will be drawn into the pump cylinder 2. On the succeeding downward stroke of the piston the portion of the oxygen or other gases entrapped in the pump cylinder 3, will be forced into the patient's lungs by the closing of the valves 16, and 23, and the opening of the valve 18. At the same time the discharge from the lungs which had been drawn into the pump cylinder 2, will be forced through the opening valve 25, into the open air. Thus the action of the pump will be continuous, alternately filling the patient's lungs with the life giving gases and then emptying the lungs into the open air.

The modification of my invention, illustrated in Fig. 3 is intended to produce a more compact and lighter form of apparatus, but which operates on identically the same principles as the first form above described. In the construction illustrated 33 is a light frame on which the bellows 32 and the bellows 31 are mounted. Each bellows takes the place and performs the function of one of the cylinders 2 or 3 in Fig. 1, and is an exact equivalent.

lent thereof, so that throughout this specification and the claims I desire to have it understood that the term cylinder includes the term bellows. The bellows are operated by the links 29 and 30, which are pivoted to the walking beam 26. This walking beam is pivoted at 34 and is reciprocated by the pin 28 on the crank disk 35, which pin moves in the slot 27 formed in an extension of the walking beam. The inlet 15 and the outlet 24 with their valves 16 and 25 operate in exactly the same manner as do the same parts in Fig. 1. The tube 19 takes the place of the chamber 19 in Fig. 1, and the connecting pipes 17 and 22 have their equivalents in the said tube. The valves 18 and 23 operate the same in Fig. 3 as in Fig. 1. An adjustable stroke may be given to the bellows by shifting the position of the rods 29 and 30 along the slot shown in the ends of the walking beam 26. Of course, various changes could be made in the details of my apparatus without departing from the spirit of my invention. In cases where fresh atmospheric air is to be used instead of prepared gas it would only be necessary to have the tube 15 or tank 14 open to the air instead of to the receiver of prepared gases.

Having therefore described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a double cylinder force pump, an inlet valve for one cylinder, an outlet valve for the other cylinder, a connection between said cylinders, two valves in said connection which open away from the cylinder having the inlet valve, and a mouth piece opening into said connection between said two last mentioned valves, substantially as described.

2. The combination of a double cylinder force pump, an inlet valve for one cylinder, an outlet valve for the other cylinder, a connection between said cylinders, two valves in said connection which open away from the cylinder having the inlet valve, and a mouth piece opening into said connection between said last two mentioned valves, together with a tank for preparing gases connected to the first mentioned inlet valve, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. Z. DESANT.

Witnesses:

A. P. SMITH,

WARREN W. FOSTER.