(No Model.)

J. E. CASEY & A. W. BROWNE.

OXYGEN INHALER.

No. 402,303. Patented Apr. 30, 1889.

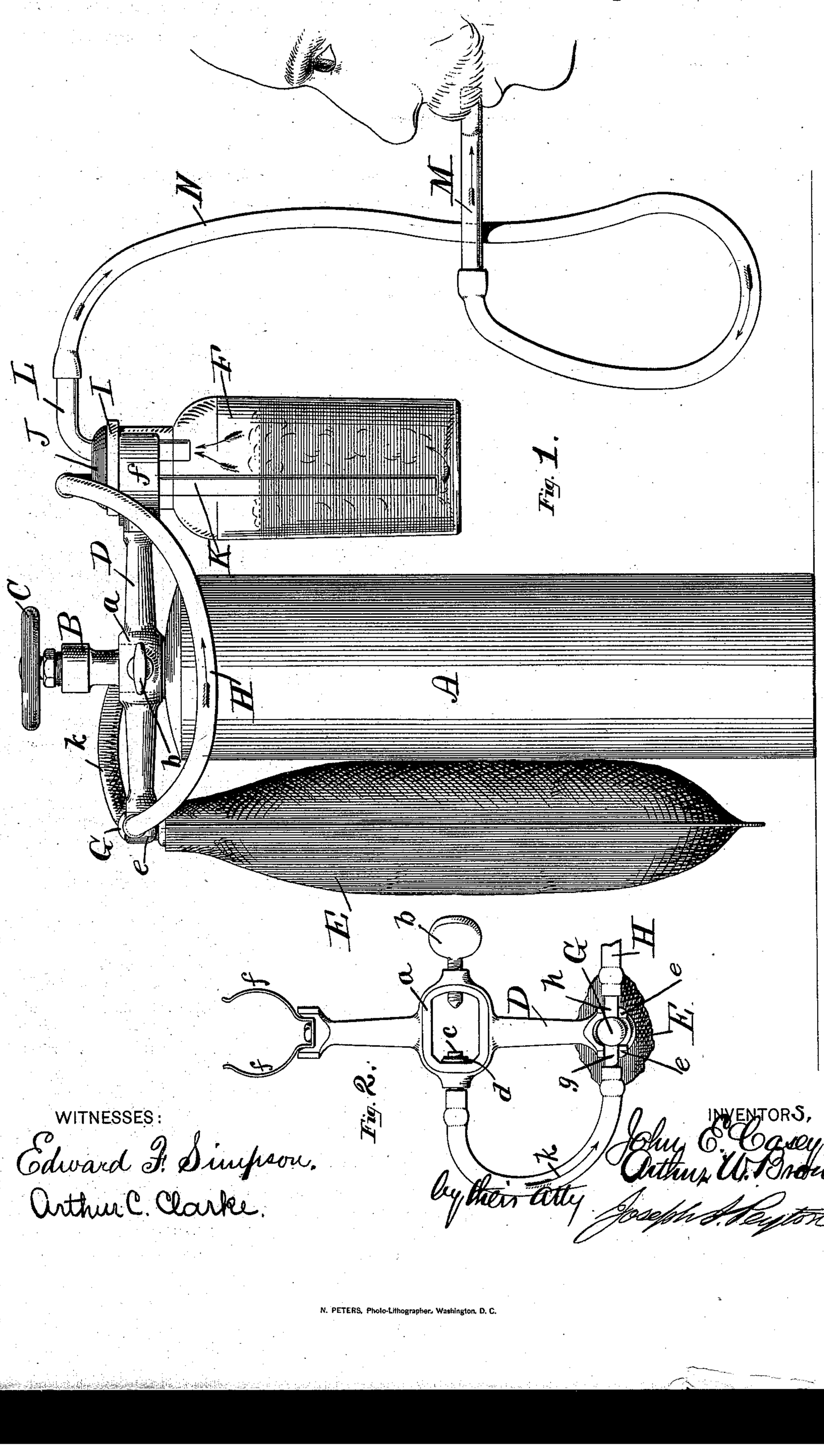

Fig. 1.

Fig. 2.

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OXYGEN-INHALER.

SPECIFICATION forming part of Letters Patent No. 402,303, dated April 30, 1889.

Application filed November 2, 1888. Serial No. 289,789. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. CASEY, of Tottenville, in the county of Richmond and State of New York, and ARTHUR W. BROWNE, of Prince's Bay, in said county and State, have jointly invented certain new and useful Improvements in Apparatus for Administering Oxygen by Inhalation, of which the following is a specification.

Our invention relates to improvements in apparatus for administering oxygen by inhalation; and our objects mainly are to provide apparatus for this purpose of simple, compact, economic construction, and which shall be regular in action and adapted to be conveniently operated.

The subject-matter deemed novel will hereinafter be designated by the claims.

In the accompanying drawings, which show that organization of parts in accordance with our invention which we deem preferable, but to all details of construction and arrangement of which we do not wish to be understood as confining ourselves, as variations may be made therefrom without departure from essential features of our invention, Figure 1 is a view in elevation showing the apparatus as in use. Fig. 2 is a plan view showing the carrier or supporter and attachments thereof, by way of which an oxygen-receiver and a water-trap vessel are connected with and sustained by an oxygen-holder, a portion of the receiver being also represented.

An oxygen-holder, A, charged with compressed pure oxygen, is provided at its head or upper end with an appropriate valve, B—such as a compression-valve—actuated by the wheel C. This valve when closed or seated prevents escape of oxygen from the holder to a gas bag or receiver hereinafter described, and is operated to regulate the supply of oxygen to said receiver.

A carrier or supporter, D, by which the gas-receiver E and a water-trap vessel, F, have supporting connection with the holder A, is, as shown, so constructed and applied to the holder that it may readily be detached therefrom, while the gas-receiver and water-trap vessel may readily be separated from the carrier. The detail construction of said carrier D, as in this instance shown, is as follows: About midway its length it is enlarged and has an opening through it, thereby providing a collar, *a*, adapted to embrace the shell or casing of the valve B. A set-screw, *b*, passing through one side of this collar and bearing against the valve-casing, serves to draw the opposite side of the collar firmly against the valve-casing and securely hold the carrier in place. When properly adjusted in this way, the inner end of a short tube, *c*, is drawn into an escape-port in the side of the valve-casing and firmly held there. This tube *c*, which serves as a coupling for a tube leading to the gas-receiver, as in turn explained, passes through the side of the carrier-collar opposite that provided with the set-screw, and has fixed upon it near its inner end an annular collar, *d*, larger than the opening for the tube through the carrier-collar, so as to prevent improper outward movement of the tube. A suitable washer (or washers) about the tube and resting against its collar insures, when compressed about the escape-port, a tight joint to prevent leakage of oxygen around the tube.

By manipulating the set-screw the carrier may quickly be secured to and removed from the holder. At one end of the carrier it is enlarged and forked, the arms *e e* of the forks being transversely grooved upon top to provide seats or loose-fitting half-bearings for an attachment of the gas-receiver, by which it is detachably suspended and supported. At the opposite end of the carrier it is provided with a spring-clamp, *f*, for engaging the water-trap vessel and detachably supporting it.

The gas-bag or oxygen-receiver E is fitted at its mouth with an open-bottomed hollow stopper, G, having a solid head and laterally-projecting arms *g h*, forming a cross-head to rest in the grooves or bearings in the forked end of the carrier. These arms are hollow, constituting oppositely-projecting short coupling-tubes opening into the hollow stopper.

A tube, *k*, of suitable material—such as rubber—is detachably connected at its opposite ends with the coupling-tubes *c* and *g*, respectively, thus making communication between the receiver and the holder when the valve

of the holder is operated to allow of the passage of the oxygen to the receiver.

By way of a suitable tube, H, detachably connected with the coupling-tube *h*, communication is made between the receiver and the water-trap vessel, as in turn to be explained.

The water-trap vessel is fitted to the carrier by pressing it into the spring-clamp, the vessel, as shown, being formed by an ordinary glass bottle or jar, the neck of which is grasped by the clamp beneath the shouldered mouth I. The mouth of this vessel is tightly closed by a readily-removable rubber or other suitable stopper, J, through and tightly fitting an opening in which a receiving-tube, K, passes. This tube is preferably made of glass with a bend above the stopper, so that its upper end extends laterally to its lower portion which passes through the stopper into the washer. The receiving-tube when properly adjusted terminates at its lower end near the bottom of the water-trap vessel. The tube H is detachably connected at one end with the upper end of the receiving-tube K, and the gas passing from the receiver is delivered into the water-trap vessel near the bottom thereof.

When the apparatus is to be used, the water-trap vessel is supplied with water in sufficient quantity, being filled, say, half-full or more, leaving an unoccupied space in the upper portion of the vessel between its stopper and the surface of the water.

An outlet-tube, L, bent so as to project at its upper end laterally to the water-trap vessel, is fitted snugly in a second perforation in the stopper. This tube is much shorter than the inlet or receiving tube K, and terminates at its lower end a short distance below the stopper in the space above the water in the vessel.

A flexible delivery-tube, N, is connected at one end with the upper end of the outlet-tube L of the water-trap vessel, and at its other end this delivery-tube is provided with a suitable mouth-piece, M.

In operation the valve of the holder is actuated to allow the desired quantity of the compressed pure oxygen therein to pass to the receiver, the degree of expansion of the receiver indicating with sufficient accuracy the amount of oxygen supplied thereto. When the receiver is properly supplied, the valve is closed to shut off the flow of the oxygen. The escape of the gas from the receiver as fast as supplied thereto is prevented by the water in the trap-vessel, the resistance to the escape of the gas afforded by the water being sufficient to permit of a proper quantity of oxygen being supplied to the receiver. Should the oxygen be supplied in excessive quantity to the receiver, this will be made apparent by the bubbles produced in the trap-vessel by the passage of the oxygen through the water therein. The mouth-piece being placed in the mouth of the patient, the oxygen is inhaled into the lungs, passing from the receiver through the contents of the trap-vessel, and thence by way of the outlet-tube and delivery-tube. Should the amount of oxygen gas supplied by a single inflation of the receiver be insufficient, the above-described operation may be repeated. After employing the apparatus as above the parts may be separated until such time as its further use is required. When oft-repeated use of the apparatus results in exhausting the oxygen in the holder, it may be recharged by way of the coupling-tube *c*, the tube *k* being first detached and the valve opened.

From the above description it will be seen that the various parts of the apparatus are so constructed and adapted for putting together that the apparatus may quickly be set up for use, readily taken apart for putting away in small space or packing, and that when in working order but very little space is occupied, the holder serving as a base or support for the other parts.

We claim as our invention—

1. The combination of the valved holder, the receiver having communicating connection with the holder, and the water-trap vessel supported by connection with the holder and with which the receiver has communicating connection, substantially as set forth.

2. The combination of the valved holder, the carrier supported thereby, the receiver supported by the carrier and having communicating connection with the holder, and the water-trap vessel supported by the carrier and having communicating connection with the receiver, substantially as set forth.

3. The combination of the valved holder, the receiver having communicating connection with the holder, the water-trap vessel with which the receiver has communicating connection, and the delivery-tube having communicating connection with the water-trap vessel and provided with the mouth-piece, substantially as set forth.

In testimony whereof we have hereunto subscribed our names.

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Witnesses:
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