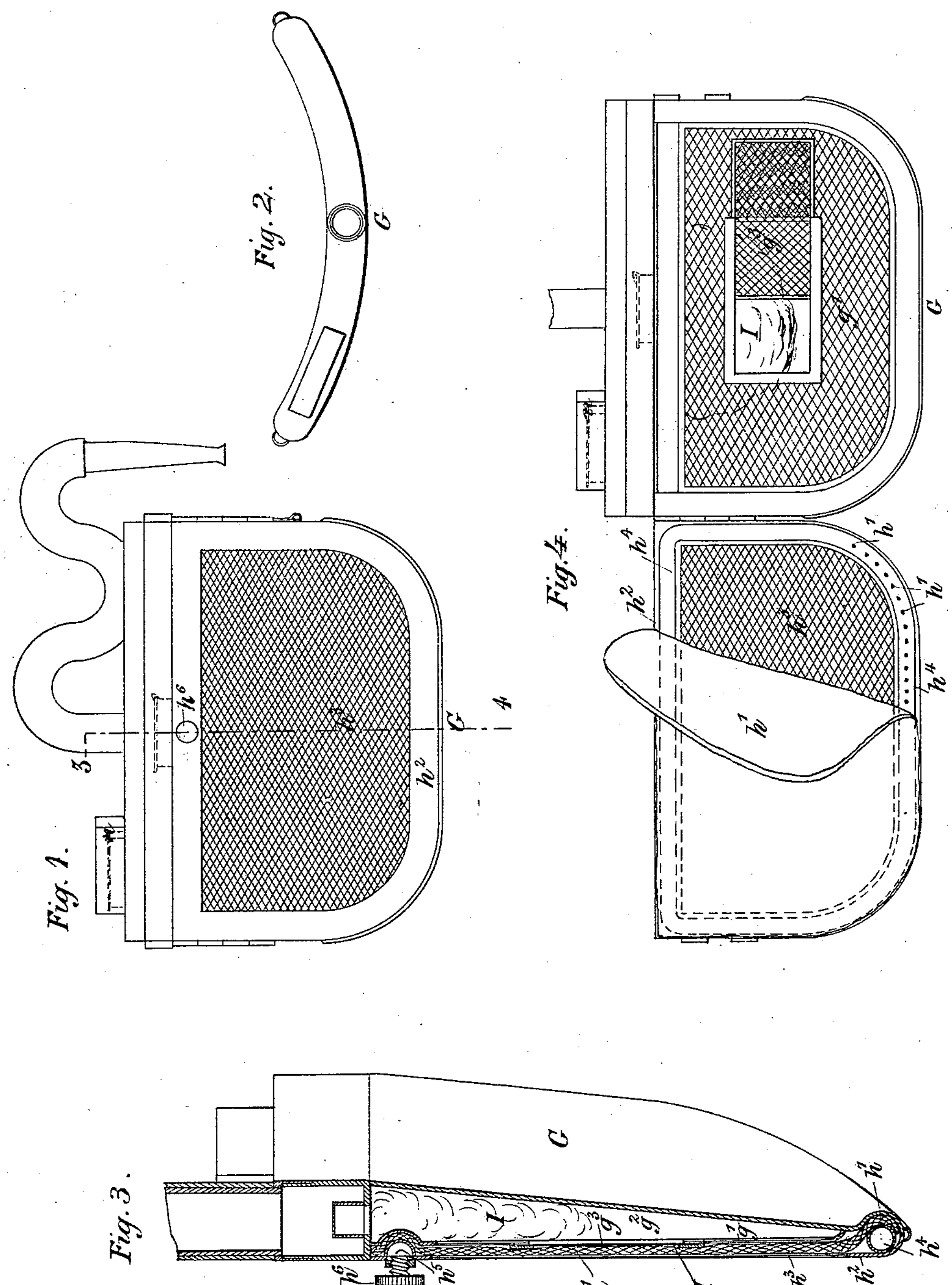
2 Sheets--Sheet 1.

J. CARRICK.

Combined Respirator and Inhaler.

No. 167,496. Patented Sept. 7, 1875.



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J. CARRICK.

Combined Respirator and Inhaler.

No. 167,496. Patented Sept. 7, 1875.

Fig. 6.

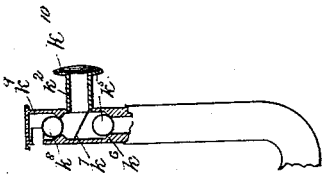


Fig. 7.

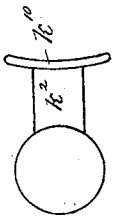
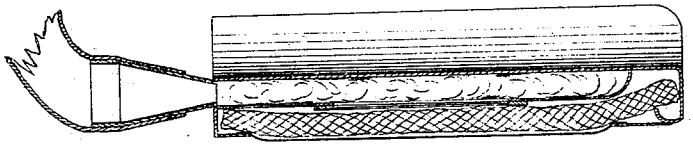


Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES CARRICK, OF GLASGOW, NORTH BRITAIN.

IMPROVEMENT IN COMBINED RESPIRATORS AND INHALERS.

Specification forming part of Letters Patent No. **167,496**, dated September 7, 1875; application filed October 30, 1874.

To all whom it may concern:

Be it known that I, JAMES CARRICK, of George Square, Glasgow, in the county of Lanark, North Britain, have invented Improvements in Apparatus for Respiratory and Inhaling Purposes, of which the following is a specification:

My invention consists of a combined inhaling and respiratory apparatus, which is more especially designed to warm and medicate the air respired.

This apparatus is illustrated in Figures 1, 2, 3, and 4 of the accompanying drawings, Fig. 1 being a front view; Fig. 2, a plan; Fig. 3, a vertical section taken on the line 3 4, Fig. 1; and Fig. 4 is a front view, showing the case open.

The said apparatus consists of a case, G, divided by a diaphragm, g^1, of wire-gauze or perforated sheet metal, into two compartments, g^2 H. The said diaphragm is provided with a sliding or hinged shutter, g^3, which covers an aperture therein, through which aperture felt, wool, or other absorbent, I, saturated or impregnated with any medicinal matter with which it may be wished to impregnate the air to be inhaled, may be put into the said inner compartment g^2. This compartment communicates with an air-chamber, provided with inlet and outlet valves and a flexible tube, terminating in a mouth-piece, as in the arrangement herein last described. In the other compartment H felt, or flannel, or other suitable filtering medium h^1 is placed. The outer side of this compartment consists of a hinged door, h^2, of sheet metal, part of which door is perforated or is formed of wire-gauze h^3. On the inside of the said door, and near the edges thereof, a tube, h^4, is affixed, in the upper part of which tube an aperture, h^5, is made, which aperture is provided with a screw-stopper, h^6, and at the lower part of the said tube, on the side next the filtering medium h^1, small perforations h^7 h^7 are made.

The method of using and the action of this respirator are as follows: The apparatus is suspended from the neck, and the mouth-piece held between the lips, the case resting on the chest, but under the outer clothes or garments. At each inspiration of the user air enters the respirator through the reticulations or perforations h^3 in the door h^2, and thence passes through the filtering medium h^1, through the reticulations or perforations in the diaphragm g^1 and sliding shutters g^3, and thence through the medicated medium I placed in the inner compartment g^2, where it is impregnated with the medicinal matter used, and from which it passes through the air-chamber and tube, as in the respirator hereinbefore described, the said air being warmed in its passage by the animal heat of the person using it. When it is wished to moisten the air inspired, the tube h^4 is filled with water, which, passing out of the perforations h^7 h^7, keeps the filtering medium damp. Instead of placing the inlet and outlet valves in a chamber formed on the inhaling apparatus, they may be placed in the tube near the mouth-piece, or in the said mouth-piece, as hereinafter described, and illustrated in Figs. 6 and 7. When the said valves are so arranged the air-chamber C is dispensed with, and the tube D communicates directly with the inhaling apparatus or case, as illustrated in Fig. 5, which is a vertical transverse section of a combined inhaling and respiratory apparatus so constructed.

In Figs. 6 and 7 the mouth-piece k^2 is provided with an inlet-valve consisting of a sphere, k^5, which rests on an annular seat, k^6, the motion of the said sphere being limited by the pin k^7, which passes across the said mouth-piece. The outlet-valve k^8, which is similar in construction to the inlet-valve, is placed in a short tube, k^9, which communicates with the said mouth-piece. The part which is held in the mouth consists of a thin plate of ivory or other suitable material, k^{10}, the said plate being so formed as to rest without inconvenience to the user between the lips and teeth.

Having now described my invention of improvements in apparatus for respiratory and inhaling purposes, I wish it to be understood that I do not limit myself to the precise details herein described, as the same may be varied without departing from the nature of my invention, but

I claim as my said invention—

1. The general combination and arrangement of parts constituting the hereinbefore-described respiratory and inhaling apparatus—that is to say, a case formed, as described, in

two compartments, the one to contain medicated matter, the other a filtering medium, which latter compartment is provided with means for keeping said filtering medium moist, in combination with a tube terminating in a mouth-piece, and inlet and outlet valves, by which communication of said tube with the atmosphere and the case is regulated, substantially as shown and set forth.

2. The mouth-piece for respirators and inhalers, consisting of the mouth-piece k^1, valves k^5, k^3, and flange k^{10}, constructed, arranged together, and applied substantially as described, and shown in Figs. 6 and 7.

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