

## **Specification of William Brown Roof : construction of respirators.**

### **Contributors**

Rooff, William Brown.

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A.D. 1848 . . . . . N° 12,273.

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**S P E C I F I C A T I O N**

**OF**

**WILLIAM BROWN ROOFF.**

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**CONSTRUCTION OF RESPIRATORS.**

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**LONDON:**

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**Construction of Respirators.**

**ROOFF'S SPECIFICATION.**

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM BROWN ROOFF, of Stanhope Street, Regent's Park, in the County of Middlesex, Chemist, send greeting.**

**WHEREAS** Her present most Excellent Majesty Queen Victoria, by Her  
5 Royal Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Twenty-first day of September, in the twelfth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said William Brown Rooff, Her especial license, full power, sole privilege and authority, that I, the said William Brown Rooff, my eñors,  
10 admōrs, and assigns, or such others as I, the said William Brown Rooff, my eñors, admōrs, or assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein mentioned, should and lawfully might make, use, exercise, and vend, within England,  
15 Wales, and the Town of Berwick-upon-Tweed, my Invention of "CERTAIN IMPROVEMENTS IN THE CONSTRUCTION OF RESPIRATORS;" in which said Letters Patent is contained a proviso obliging me, the said William Brown Rooff, by an instrument in writing under my hand and seal, particularly to describe and ascertain the nature of my said Invention, and in what manner the same is to be performed, and to cause the same to be enrolled in Her  
20 Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.



*Rooff's Improvements in the Construction of Respirators.*

NOW KNOW YE, that in compliance with the said proviso, I, the said William Brown Rooff, do hereby declare that the nature of my said Invention, and the manner in which the same is to be performed, is particularly described and ascertained in and by the following description thereof, reference being had to the Drawings hereunto annexed, and to the letters and figures 5 marked thereon (that is to say):—

My Invention of improvements in the construction of respirators has for its object the supply of pure warm air to the lungs of consumptive and asthmatic patients, or other persons requiring the same. This object I effect by providing separate and distinct channels for the passage of the pure and 10 the expired air to and from the mouth of the patient, such channels being provided with valves which will effectually prevent the expired and inspired air from mixing, and the expired air from being again in part taken into the lungs, as is the case when the respirators now generally in use are worn. By my improved construction of respirator I avail myself of the heat of the 15 expired air to warm the pure air as it passes through the instrument to the mouth of the patient, and am thus enabled to present pure atmospheric air to the respiratory organs of the patient at such a temperature as will remove all cause of irritation thereto.

In the accompanying Drawing my improved construction of respirator is 20 shewn in several views, the silk band or other covering by which it is attached to the patient being removed, the better to shew the instrument.

Fig. 1 is a front view of the respirator, which is made of a crescent shape in plan, in order to fit closely over the mouth; Fig. 2 is a view of the side which fits against the mouth; and Fig. 3 is a vertical section taken through 25 the middle of the respirator.

The instrument consists of a crescent or other suitably shaped metal case *a*, the front of which is pierced with holes *b, b*, (see Fig. 1), for the admission of pure air. The back of this case (see Figs. 2 and 3), is provided with a valve box *c*, through which the air from the atmosphere passes to the mouth 30 to be inspired. The cover of this valve box is perforated, as shewn, and the valve or valves is or are made so as to open outwards towards the mouth of the patient. Within the case *a* are two horizontal partitions *d, d\**, shewn best at Fig. 4, which is a sectional elevation of the respirator, the front of the case *a* being removed. These partitions *d, d\**, are intended to receive the 35 ends of a series of vertical metal tubes *e, e*, which are set at equal distances apart, as shewn in the horizontal sectional view at Fig. 5 (taken in the line 1, 2, of Fig. 2), and fill up the space between the partitions *d, d\**, so as to allow of but narrow channels for the passage of the pure air between and



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*Rooff's Improvements in the Construction of Respirators.*

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around them as it passes from the entrance openings *b* to the valve box *c*, to be breathed by the patient. In the inner face of the case *a*, between the top thereof and the partition *d*, a series of openings *f* are made (see Fig. 4), for the purpose of allowing the vitiated or expired air to pass off to the atmosphere. This vitiated air on entering the chamber formed by the top of the case *a* and the horizontal partition *d*, passes down the tubes *e*, and enters another chamber formed by the partition *d*<sup>\*</sup>, and a third partition *g* which has openings in it, as shewn in the sectional plan view, Fig. 6, and is provided with valves to close those openings, as represented by Fig. 7, which is a sectional view looking upwards, taken in the line 3 . . . 4 of Fig. 4. The expired air passes out at these valves and through the grating which forms the bottom of the case *a* into the atmosphere, and while thus passing out the conducting tubes *e, e*, are heated thereby. As the patient commences a fresh inflation of his lungs, pure air is drawn into the respirator through the openings *b*, and coming in contact with the heated tubes *e, e*, in its passage to the valve box *c*, its temperature is raised to a degree suitable for inhalation. Thus at every expiration the vitiated air is carried off by a channel distinct from that which conducts the pure air to the mouth, and at every inspiration a supply of air uncontaminated with the vitiated air from the lungs is drawn into the instrument and warmed before it reaches the lips of the patient. To prevent air from reaching the mouth of the patient otherwise than through the proper channels, a padding *h, h* (Figs. 2 and 3), is provided, which fits close around the mouth, and thus effectually prevents the access of air otherwise than through the instrument in the way desired. I would remark, that bandages resembling neckcloths may be attached to the instruments as usual with respirators, but care should be taken that the part of the respirator is not so thickly covered with such bandage as to impede the ready passage of the air through the openings *b*. The metal I prefer for making these instruments is silver, as it is not readily affected by the moisture of the breath; but other metals or alloys of metals plated with silver may also be employed with advantage.

Having now described the nature of my Invention, and the manner of carrying the same into effect, I wish it to be understood that I do mean or intend to confine myself to the precise construction or arrangement of parts herein shewn and described, as they may doubtless be varied without departing from the nature and object of my Invention. But that which I consider to be new and therefore wish to claim as the Invention secured to me by the hereinbefore in part recited Letters Patent is, constructing respirators in such a manner that the vitiated or expired air may be conducted off in a separate



*Rooff's Improvements in the Construction of Respirators.*

channel from the in-coming air to be inspired, and thus through the medium of its metallic channel be made to heat the pure air on its passage to the respiratory organs of the patient, as above described.

In witness whereof, I, the said William Brown Rooff, have hereunto set my hand and seal, this Twentieth day of March, in the year of 5 our Lord One thousand eight hundred and forty-nine.

(L.S.) W. B. ROOFF.

AND BE IT REMEMBERED, that on the Twentieth day of March, in the year of our Lord, the aforesaid William Brown Rooff came before our said Lady the Queen in Her Chancery, and acknowledged the Specification 10 aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that purpose.

Enrolled the Twenty-first day of March, in the year of our Lord One thousand eight hundred and forty-nine.

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FIG. 5.



FIG. 2.

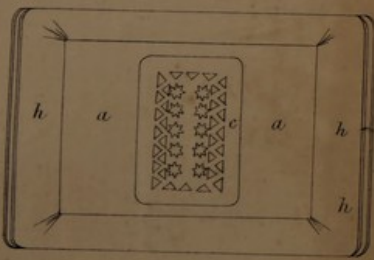


FIG. 3.

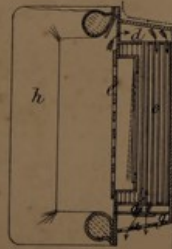


FIG. 1.



FIG. 4.

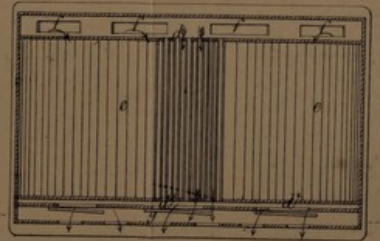


FIG. 6.

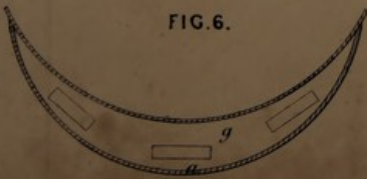
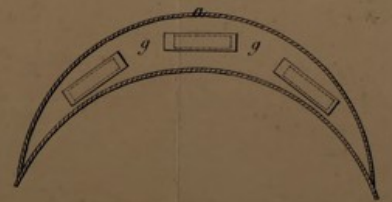


FIG. 7.



*The axilled drawing is colored.*

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