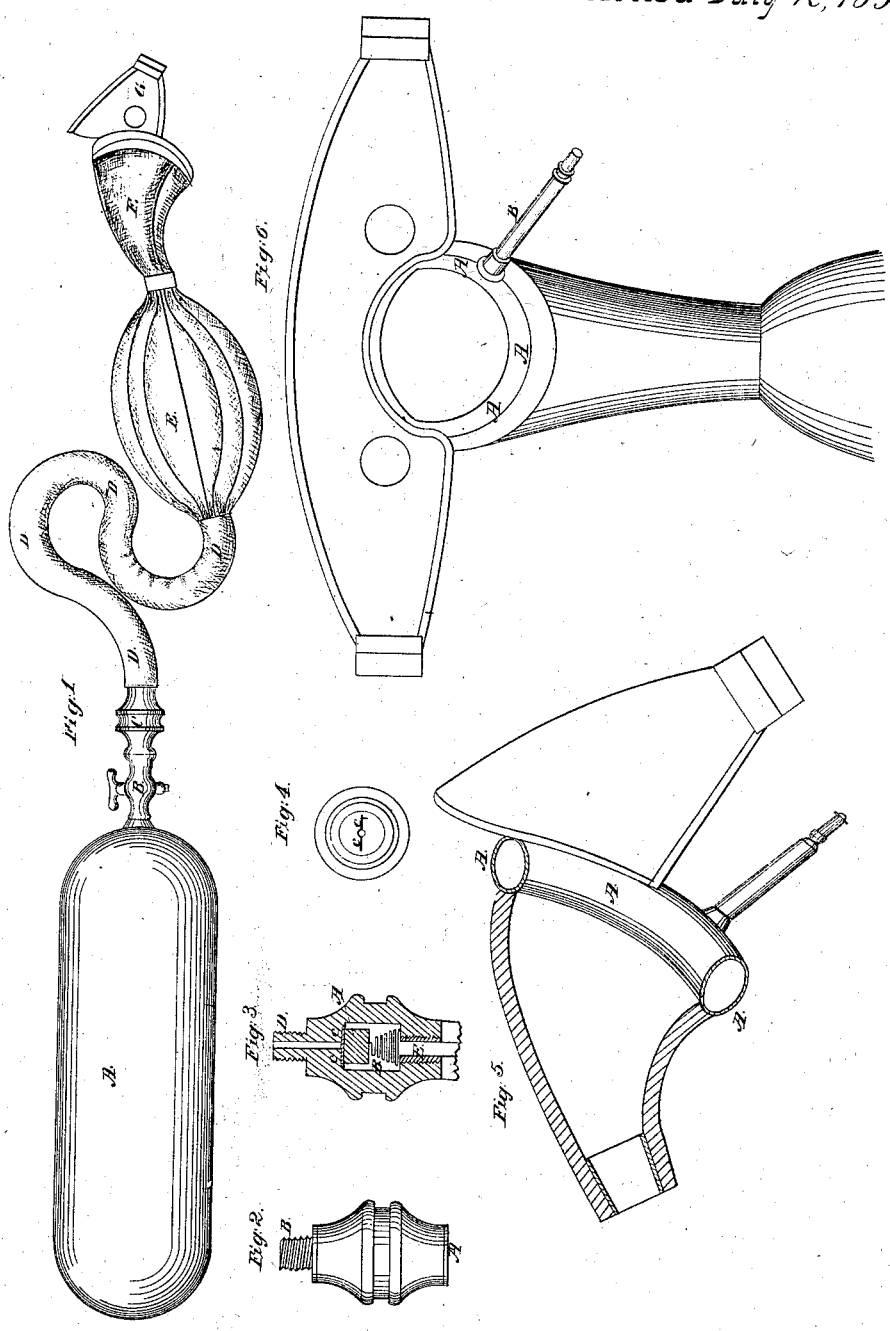


B. I. Lane;
Respirator,

Nº 7,476,

Patented July 2, 1850.



UNITED STATES PATENT OFFICE.

BENJ. I. LANE, OF CAMBRIDGE, MASSACHUSETTS.

RESPIRING APPARATUS.

Specification of Letters Patent No. 7,476, dated July 2, 1850.

To all whom it may concern:

Be it known that I, BENJAMIN I. LANE, of the city of Cambridge, in the county of Middlesex and State of Massachusetts, have
5 invented a new and useful instrument called "Lane's pneumatic Life-preserver," for the purpose of breathing pure air from an air chamber into which the same has been condensed more or less, the air passing through
10 the apparatus hereinafter particularly described, thereby enabling a person to enter buildings and vessels filled with smoke or impure air and into sewers, mines, wells, and other places filled with noxious gases
15 or impure air, the person being protected from suffocation arising from such causes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same,
20 reference being had to the annexed drawings, making a part of this specification.

Figure 1 represents a perspective view of the whole apparatus with its several parts put together in their respective order
25 for use.

Letter A is an air chamber made of one (or more cylinders connected with each other) made of brass copper or other tenacious substance capable of sustaining a
30 high pressure in which air is to be condensed by means of an air pump, said cylinder being made large enough to contain from five to seven gallons, and strong enough to bear the pressure of five to seven
35 atmospheres, the cylinders being strapped to the back of the wearer when charged—or it may be made in the form of a bag, sack, or coat, made of vulcanized rubber to be inflated with a common air bellows.

40 Letter B is a common stop-cock screwed to the cylinder to let the air pass out at pleasure.

Letter C is an equalizing valve (illustrated by Figs. 2, 3, 4).

45 Letter D is a vulcanized rubber tube containing spiral wire to preserve its tubular form when bent into any shape for the free passage of the air to the nose.

Letter E is a globular bag made of vulcanized rubber very thin and pliable to
50 allow the air to expand before breathing made sufficiently large to contain four or five respirations.

Letter F is a nose piece (illustrated by
55 Figs. 5 and 6) with goggles attached, made also of vulcanized rubber with a strap to

fasten the same to the head; the peculiar feature of which is a tube of vulcanized rubber very thin and elastic and from its form when filled with air fitting perfectly
60 any irregularities in the face of the wearer, preventing the ingress of external air, and separating the nose from the eyes and mouth.

Fig. 2 is a perspective view of equalizing
65 valve screwing on the stop cock at A the rubber pipe screwing on at B.

Fig. 3 is a longitudinal section of the valve showing the structure of the interior.

Letter A is a small piece of vulcanized
70 rubber or other substance very elastic about $\frac{3}{8}$ th of an inch in thickness.

Letter B is a spiral spring to retain the rubber in its position when expanded.

Letters C, C are two grooves into which
75 the vulcanized rubber A is pressed by the expansion of the air in the cylinder when condensed to a greater or less degree, the rubber partially filling the grooves according to the pressure of the air thereby admit-
80 ting the passage of the same quantity or volume of air through the grooves under all pressures and then through the hole marked D into the tube to the nose.

Fig. 4 is a transverse section of the valve
85 showing the two grooves C, C, into which the rubber presses.

Fig. 5 is a longitudinal section of nose
piece.

Letter A represents a view of the air tube
90 which is made of very thin elastic rubber or other substance and being inflated packs perfectly air tight about the nose of any person to prevent the ingress of external
95 air smoke or gas and also to stop all communication between the nose and eyes thereby enabling the wearer to breathe the same air over two or three times into the elastic bag (letter E, Fig. 1) without dimming the
100 glasses with the breath.

Fig. 6 is an interior view of nose piece
showing the air tube A, A, A &c and the tube B by means of which it is inflated.

The manner in which the apparatus is to be used is described in the following lan-
105 guage. The air pump is to be screwed to the stop cock B (in Fig. 1,) and the cylinder A is to be charged with air, the stop cock to be turned before unscrewing the pump to retain the air in the vessel. The
110 valve C is then to be screwed to the stop cock (the other parts D E F and G being

firmly attached to the valve) the nose
piece F and goggles G in Fig. 1 are to be
adjusted to the nose and face being firmly
strapped around the head by the elastic
5 straps attached thereto the stop-cock B is
then to be turned and the air will pass
through the aperture E in Fig. 3 and press
upon the elastic rubber which by means of
its elasticity is so pressed into the grooves
10 C, C, as nearly to fill them according to the
force which the condensation of the air
acquires by being more or less condensed.
The air then passes through the tube D
(Fig. 1,) into the thin bag E, where it ex-
15 pands to its original bulk and is received
into the lungs through the nose piece and
nose. After being expired into the bag two
or three times it is expired from the mouth
which organ is left unprotected. As the
20 quantity of air in the chamber is reduced
and the pressure on the elastic rubber in
the valve consequently diminished the elas-
tic rubber recedes from the grooves C, C,
leaving a larger space for the air to escape

so as to supply the same quantity of air 25
to the wearer under a high as under a low
pressure. The cylinder is to be confined to
the person of the wearer.

What I claim as my invention and desire
to secure by Letters Patent is—

The valve represented by Figs. 2, 3, 4, 30
made of any metallic substance; and the nose-
piece represented by Figs. 5 and 6 having
an air tight tube surrounding that part
which is designed to fit about the nose to 35
accommodate the features of any person,
and the use of these together with a cylin-
der vessel, air-chamber, or bag, for the pur-
pose of enabling a person to breathe with
perfect ease, air which has been condensed 40
more or less in any such cylinder, vessel, air-
chamber or bag which is to be confined to
the person of the wearer while the surround-
ing air is impure from any cause.

BENJN. I. LANE.

In presence of —

H. M. CHAMBERLAIN,
AMBROSE CHAMBERLAIN.