United States Patent [19]

Nebel

[11] **3,707,966**

[45] **Jan. 2, 1973**

[54] **PERSONAL BREATHING MASKS**

[76] Inventor: **Joseph A. Nebel,** 15630 Dobson Ave., Dolton, Ill. 60419

[22] Filed: **Feb. 25, 1971**

[21] Appl. No.: **118,912**

[52] **U.S. Cl.** **128/212,** 128/146.6

[51] **Int. Cl.** **A61m 15/00**

[58] **Field of Search** ..... 128/212, 140 R, 142, 142.6, 128/145 R, 146, 146.4, 146.5, 146.6

[56] **References Cited**

UNITED STATES PATENTS

3,491,754	1/1970	Weese	128/212

FOREIGN PATENTS OR APPLICATIONS

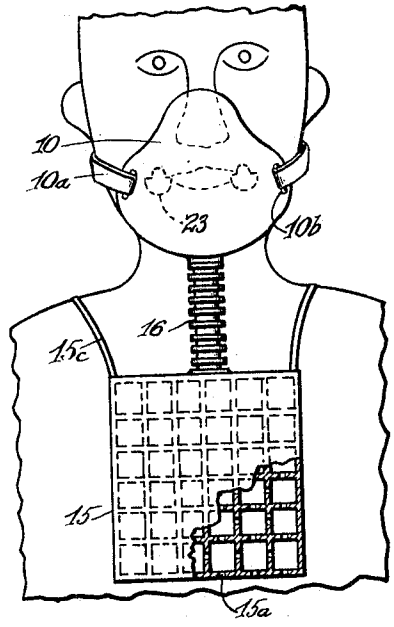
21,424	6/1882	Germany	128/212
312,213	8/1929	Great Britain	128/212
1,258,377	3/1961	France	128/212
1,364,599	5/1964	France	128/212

Primary Examiner—Richard A. Gaudet
Assistant Examiner—G. F. Dunne
Attorney—S. J. Lehrer

[57] **ABSTRACT**

An appliance for warming or treating air for personal breathing. It has an upper face mask and a lower chest pad; and these units are connected by a flexible conduit. The chest pad is of cellular construction opening in the direction of the wearer's body to receive heat from the same; and the face mask has inlet and outlet valves activated by inhalation and exhalation to draw warmed air from the chest pad and expel it from the face mask. The chest pad may be filled with a porous substance which filters atmospheric air or lends it a medicated content beneficial for respiratory ailments.

3 Claims, 6 Drawing Figures



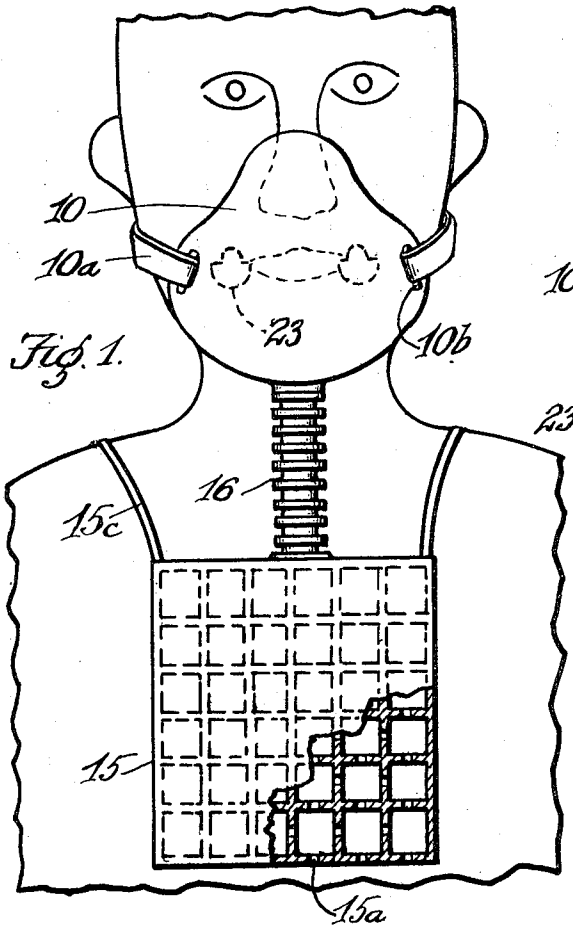


Fig. 1.

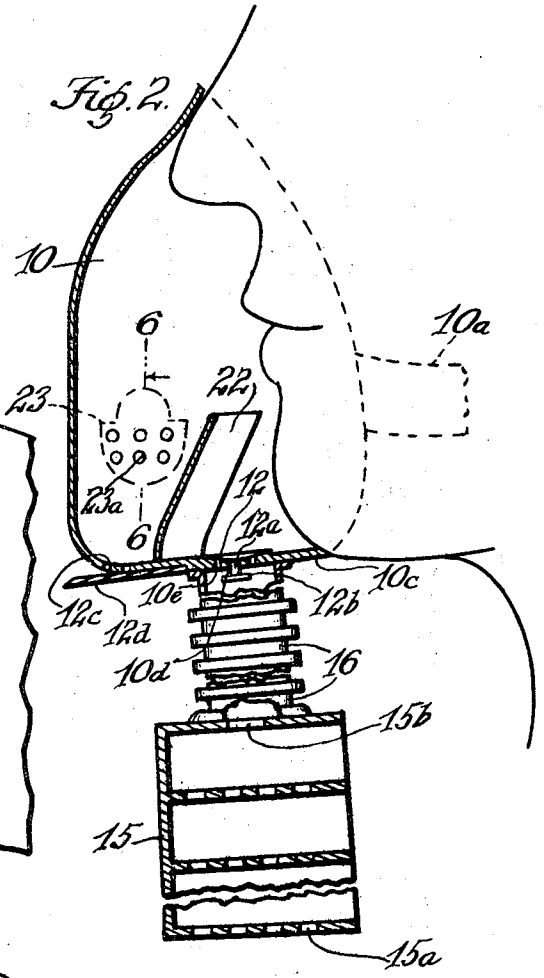


Fig. 2.

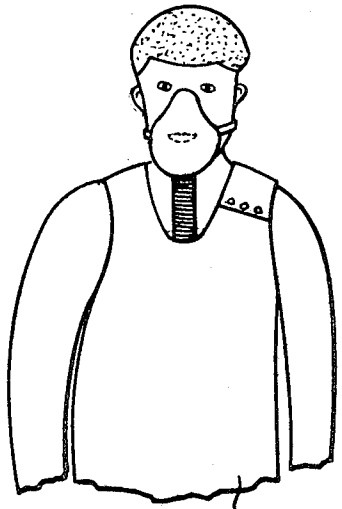


Fig. 4.

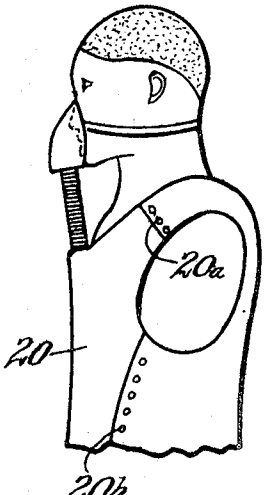


Fig. 5.

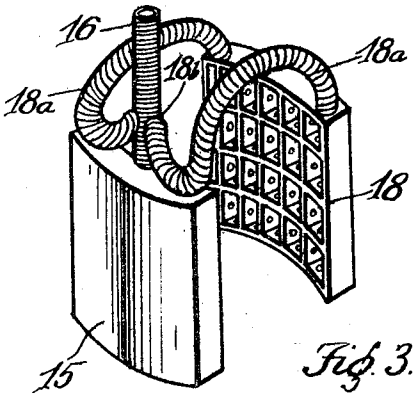


Fig. 3.

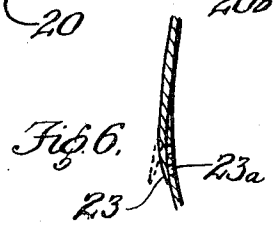


Fig. 6.

Inventor.
Joseph A. Nebel
By S. J. Lehrer
Attorney.

PERSONAL BREATHING MASKS

My invention relates to appliances designed to provide breathing comfort. In this respect, face masks have been devised which protect the wearer against sharp winds in cold weather, such masks being suitable for people who work outdoors, indulge in outdoor winter sports, or have breathing difficulties for which the inhalation of cold air is harmful. However, a greater degree of safety is necessary in the cases of persons who have a heart condition or respiratory ailments apt to be aggravated by the inhalation of cold air; and it is therefore one object of the present invention to provide an appliance in which the air inhaled by the wearer of the mask is warmed and therefore safer for breathing where the aforesaid conditions exist.

A further object is to provide an accessory for the face mask which is worn below the same and receives body heat, so that warm air may be drawn from the accessory into the mask for the benefit of the wearer during each inhalation.

Another object is to connect the bottom of the mask with a chest pad of cellular or honeycomb construction which is worn close to the body and is open where it will receive direct heat from the same.

An additional object is to provide the mask with controls which serve automatically to admit warm air into the mask from the chest pad, and divert exhaled air to escape from the mask.

Another object is to provide a chest pad which may be loaded with a filtering medium suitable for checking the entrance of polluted air or harmful air-borne substances into the mask.

A further object is to provide a supplement for the chest pad in the form of a duplicate pad worn on the back, doubling the air supply for the mask.

A better understanding of the invention may be gained by reference to the accompanying drawing, in which -

FIG. 1 is a face view of the appliance in the position of use and partly in section;

FIG. 2 is an enlarged section from the right-hand side of FIG. 1, with parts broken away;

FIG. 3 is a perspective view of the double-pad modification;

FIG. 4 is an elevation on a reduced scale, showing the lower part of the cellular appliance worn as a vest;

FIG. 5 is a view from the right-hand side of FIG. 4; and

FIG. 6 is a section on the line 6—6 of FIG. 2.

Referring specifically to the drawing, 10 denotes the face mask, which is preferably made of sheet rubber or pliable plastic material; and a suitable head band 10*a* is attached to the sides of the mask as indicated at 10*b* to hold the rim of the mask in contact with the face. FIG. 2 shows that the mask encloses a breathing space between the nose and the chin, and that the mask has a bottom 10*c* which closes against the chin.

The bottom 10*c* of the face mask has a central opening 10*d* for the slidable downward passage of the stem 12*a* of a disc valve 12, the stem having a head 12*b* at the bottom. Normally, the valve closes on a cluster of side holes 10*e* made in the mask bottom 10*c*. However, when the wearer inhales, the valve is light enough to rise and admit air upwardly into the mask.

The body accessory for the face mask is a chest pad 15 which is made of material similar to that of the mask

in order to conform to the chest when worn against an inner garment and held against the body by outer garments. As indicated in FIGS. 1 and 2, the chest pad is closed in front and has its cells opening in the direction of the body and made with holes 15*a* in the bottom and inner cell walls for the free entrance and upward passage of air from below the pad. It is preferable that the bottom of the latter be exposed to the atmosphere in order that air may freely enter the chest pad.

FIGS. 1 and 2 show that the chest pad 15 has a top outlet 15*b* leading into a flexible conduit 16 which communicates with the bottom 10*c* of the face mask. While the chest pad may be used in the hollow form for the passage of atmospheric air, it may be loaded with a filtering material — such as cotton, gauze or the like — to check the breathing of polluted air or harmful atmospheric substances, or to charge the air with a medicated substance beneficial for breathing in case the wearer has a respiratory ailment.

FIG. 3 shows the chest pad 15 supplemented by a rear pad 18, as mentioned before. While the chest pad alone may be supported by the central conduit 16 — or by suitable suspender straps 15*c* as shown in FIG. 1 — the double-pad accessory uses side conduits 18*a* for support on the shoulders, such conduits connecting with the main one at 18*b*. While the appliance-supporting means may be constituted as described, they may be modified as the situation dictates without departing from the principle of the invention.

The illustrations in FIGS. 4 and 5 show a vest 20 as a suitable enclosure or cellular wrap-around pad accessory in order to procure a greater amount of body heat. Thus, the vest may be secured by fasteners 20*a* at the shoulder and 20*b* at one side.

While the operation of the invention on inhalation has been described, facilities are provided and illustrated for exhalation. Thus, a deflected vane 22 rounded to form sides 22*a* rises from the bottom of the mask to lead the exhaled air into the frontal portion of the mask. Here two side valves 23 are provided for outlet purposes. They are molded with the mask material, each in the form of a tapered flap, as shown in FIG. 6. Behind the flap the material of the mask has a series of perforations 23*a*; and the flap flexes outwardly on exhalation to uncover the perforations and allow the exhaled breath to escape. As the same may condense from the warmth in the mask, drain holes 12*c* are made in the mask bottom; and the latter is extended with a ledge 12*d* to project drainage from the mask in forward direction.

It is now apparent that an appliance constituted as described may provide the mask with any beneficial medium suitable for breathing comfort or the alleviation of heart or respiratory ailments. The appliance is compact and inconspicuous; and it requires no extraneous heat sources which may lose efficiency or be bulky, serving continuously at maximum efficiency as long as it is worn.

I claim:

1. A personal breathing appliance comprising a face mask with inhalation and exhalation chambers, a pad adapted to lie in front of the user's body, and a conduit connecting the pad and the mask, the pad closed in front and formed of a series of apertured partitions defining a vertically spaced series of passages open at

the rear to receive warmth from said body, and the bottom of the pad having openings for the entrance of atmospheric air.

2. The structure of claim 1, an inlet valve from said conduit in the rear inhalation chamber of the mask and responsive to inhalation, outlet valve means in the front inhalation chamber of the mask and responsive to exhalation, and a vane between the valves to separate the chambers.

3. The structure of claim 1, a companion pad in back of the body, and top outlet means for the companion pad communicating with said conduit.

* * * * *