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MASK AND RESERVOIR WITH DISPOSABLE CONTAINER SUPPLY

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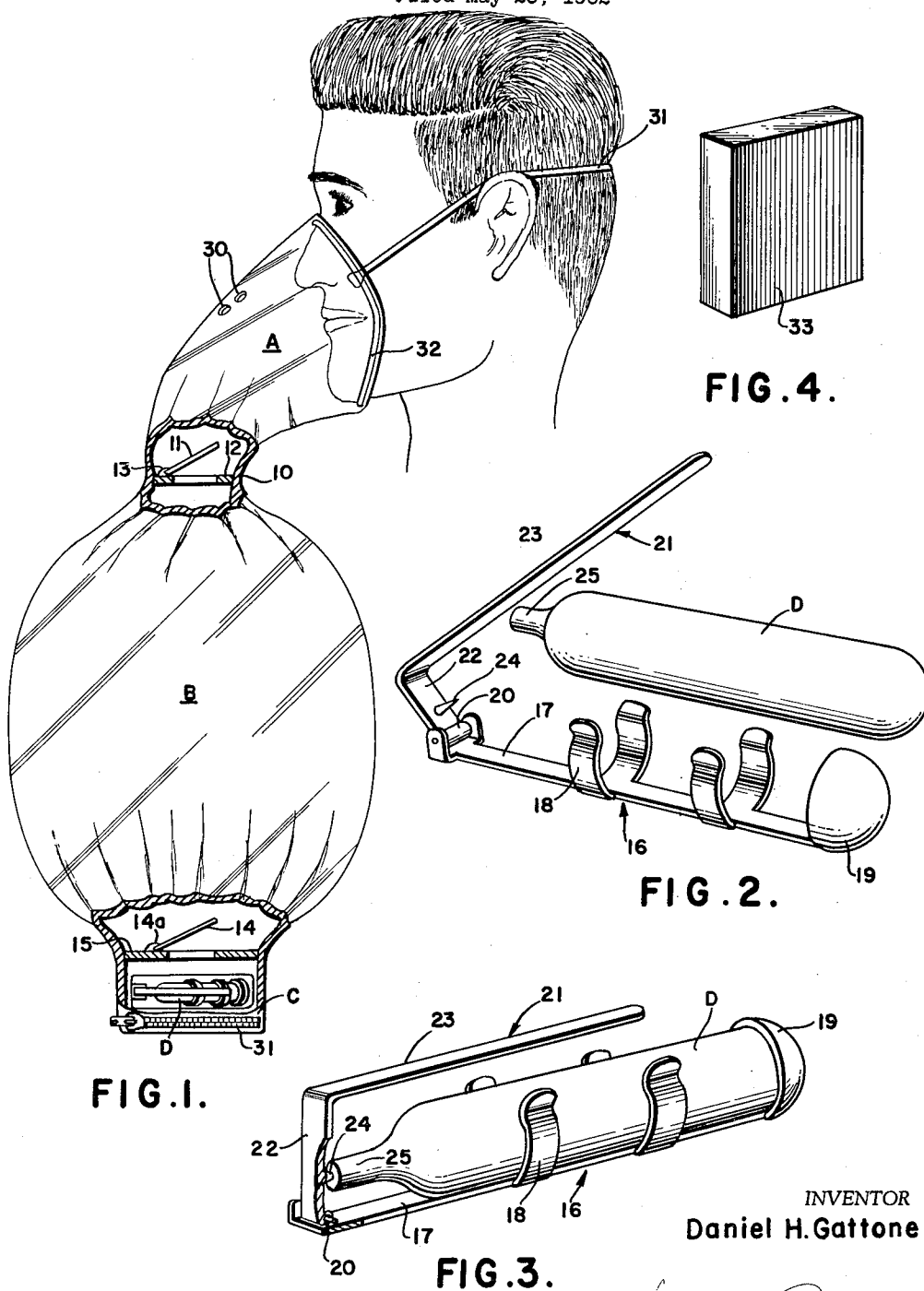


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

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3,136,312

MASK AND RESERVOIR WITH DISPOSABLE CONTAINER SUPPLY

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4 Claims. (Cl. 128—203)

The present invention relates to means for administering gaseous medium into the respiratory system of an animal or human and particularly to a unit including a mask and a gas receiving reservoir with a cartridge magazine or receptacle.

Heretofore, masks have been devised for administering anesthetics, gases and the like from cartridges and containers, but such masks are dangerous since the containers discharge gaseous medium directly into the mask with resultant dangerous pressures, which often cause harmful results to the user.

It is an object of this invention to provide a novel mask with a flexible gas reservoir, such as a plastic bag having a cartridge holder opening into the reservoir, whereby the gaseous contents of the cartridge discharges safely into the gas reservoir portion below the mask portion and not directly into the mask portion adjacent the face of the wearer.

Another object is to provide in combination a structural unit comprising a facial mask having exhalation discharge openings with an associated gas reservoir bag, said bag having a cartridge magazine with a combined one-way valve and cartridge piercing means, which bag includes a second suitably positioned one-way valve opening from the gas reservoir into the facial mask.

Still another object is to provide a mask and valved gas reservoir bag with cartridge piercing means, in a unitary combination, with an oxygen filled puncture type cartridge, which unitary combination is foldable and readily storable in pocket, pocketbook or in a small carrying case.

With the above and other objects in view, the invention consists in the construction, arrangement and combination of various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth in the claims and illustrated in the accompanying drawings, wherein:

FIGURE 1 is a side elevation view of the present invention showing the combined unitary facial and gas bag reservoir sections of the same with a cartridge magazine and cartridge combined with the gas bag reservoir;

FIGURE 2 is an enlarged view of the cartridge and mounting bracket therefor disassembled;

FIGURE 3 is an enlarged view of the cartridge in the holder therefor with the piercing barb and handle in gas liberating position; and

FIGURE 4 is an elevation view of a pocket size container for holding the completely foldable unit prior to use thereof.

Referring in detail to the drawing and first with particular reference to FIGURE 1, the present invention comprises a unit made of transparent or translucent plastic sheet or paper. This unit is formed into two main sections, namely, a face mask section A and a gas reservoir section B with an attached envelope C to receive a pressurized cartridge D.

The sections A and B are as stated preferably made of a unitary plastic sheet or of impervious paper and are divided by a pinched together restriction or neck 10 in which is mounted a check valve disk 11 of suitable material, such as plastic. This disk normally seats upon a valve seat 12 at the bottom of the neck portion 10 and opens into the mask section A when pressure in the reservoir B causes the valve disk 11 to swing open on its hinge 13.

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The flexible gas reservoir bag or section B of the unit serves as an inflatable gas reservoir and has the operatively associated gas container cartridge storage envelope C, which opens into the bottom of the reservoir through a normally open one-way check valve 14 which seats on a valve seat 15 in the bottom of the flexible reservoir B. This valve 14 is pivoted to the seat 15 by a hinge 14a.

The gas reservoir section B is preferably larger than the mask section A. However, the size of the section B is made proportional to the volume of the gas discharged from the gas cartridge D or the pressurized gas container unit. For example, if the cartridge is of a size to discharge three quarts of gas, then the section B is of a size calculated to receive such a quantity of gas safely and without danger of bursting from overloading or over-inflation.

The cartridge D is held in position in the envelope C in a snap spring holder 16, see FIGURES 2 and 3. This holder includes a base plate 17 with a plurality of U-shaped springs 18 and an end base cup 19 formed at one end of the base plate. The opposite end has a lever 20 pivoted thereto at hinge 21.

The lever comprises a section 22 extending into a handle 23, which extends rearwardly over the cartridge holding base plate 16. The section 22 of the lever is formed with a cartridge piercing barb 24 positioned to penetrate into the reduced end 25 of a cartridge D when held in position in the spring holder 16.

The envelope C opens through the normally open check valve 14 into the flexible bag reservoir B and when the gas cartridge is punctured by squeezing the envelope C to move the lever and cause the barb 24 to pierce the cartridge, gas liberated from the cartridge flows through the valve and inflates the reservoir bag.

At the top of the bag is the one-way normally open valve 11, which is identical in construction to valve 14 at the bottom of the bag and the gas flowing into the reservoir bag B continues to flow out of the reservoir and into the facial mask portion B. The valve 11 remains open as long as the patient or wearer of the mask is inhaling and taking in the gaseous supply from the reservoir B. However, when the patient or wearer exhales the valve 11 is closed by such exhalation pressure and the exhaled gas, carbon dioxide, exhausts from the exhaust openings 30 in the mask portion A. This opening and closing action of the valve 11 continues rhythmically with the patient's inhalations and exhalations during breathing.

The cartridges used are well-known in the art and the cartridge bag C is made with a "zipper" fastener 31 and is particularly made to be suitable for sealed incorporation with the material at the bottom of the gas bag B, and so positioned that the gas as it comes from the cartridge D will pass through valve 14 into the reservoir B.

The mask portion A as above stated is formed with exhalation openings 30, is applied over the mouth and nose, and is held in position by a suitable head strap 31, which may be elastic. The peripheral edge of the face opening of the mask may be bordered with a flexible and pliable strip of metal foil or wire 32 to make the mask opening adaptable to conform to the facial contour of the user.

When the mask is applied to the face of the user, the gas from a cartridge is released by puncturing the same, and the gas is gradually drawn through the check valve 11 in the seat disk 12 from the gas reservoir B into the mask A during the inspiratory phase of respiration. As the exhalation phase occurs, the valve 11 closes and the exhalation gases are released through the openings 30.

The complete unit may be folded and packaged in a pocket or purse size container 33, see FIGURE 4.

Thus there is provided an emergency gas administering unit, ready for instant use with a minimum of preparation, and which is highly economical to produce and to provide with the necessary gas supply cartridges, which are likewise very economical.

Obviously, gases and/or combinations of gases or gases and medicaments in combination may be discharged from the cartridges into the reservoir B.

Without further description it is believed that the advantages of the present invention over the prior art are apparent and while only one embodiment of the same is illustrated, it is to be expressly understood that the same is not limited thereto as various changes may be made in the combination and arrangement of the parts illustrated, as will now likely appear to others and those skilled in the art. For a definition of the scope or limits of the invention, reference should be had to the appended claims.

What is claimed is:

1. Respiratory treating means comprising a flexible bag formed with interconnected sections in the provision of a facial mask section with a face fitting opening therein, said mask section having exhaust openings formed therein, a medicament supply section and an intermediate receiver reservoir section for receiving medicament from said medicament supply section, a one way valve opening toward the facial mask between said mask section and said reservoir section, a one way valve means opening toward the said mask section connecting said medicament supply section to said reservoir section, a pressurized medicament supply capsule in said medicament supply section means permitting insertion of the said supply cartridge into said medicament supply section, and manual actuating means for discharging said supply capsule into said supply section.

2. Respiratory treating means as described in claim 1, wherein said mask section, receiver reservoir section and said medicament supply source section are formed as one foldable unit for storage in a pocket size container.

3. Respiratory treating means as described in claim 1, wherein said valve means are one-way valves opening toward said mask section from said medicament supply section, and said pressurized medicament source, said valves opening as pressurized medicament discharges from said supply section into said reservoir section to said mask section and whereby said valve means are closed upon exhalation of the user into the said mask section.

4. Means for administering oxygen comprising a flexible and foldable bag, said bag having relatively small and larger connected sections, said small section serving as a facial mask with a face fitting opening therein, said section serving as a mask having exhaust openings therein, said bag having a neck connecting said mask to said larger section, said larger section serving as an oxygen reservoir, a check valve opening toward said facial mask mounted in said neck opening between said mask and said reservoir to supply oxygen to said mask, a second small section connected with said larger section serving as a cartridge holding envelope at the bottom of said relatively larger reservoir section, a second check valve opening toward said facial mask mounted between the bottom of said larger section and the upper portion of said second small section, said envelope having an opening normally closed by a slide fastener.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,136,312

June 9, 1964

Daniel H. Gattone

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 39, for "B" read -- A --; column 3, line 32, after "section" insert a comma.

Signed and sealed this 20th day of October 1964.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents