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OXYGEN DISPENSING DEVICE

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2 Claims. (Cl. 222-5)

This invention relates to dispensers and, more particularly, to gas dispensers for dispensing gas and medical gases such as oxygen for human inhalation.

This application constitutes a continuation in part of patent application, Serial No. 768,799, filed October 22, 1958, which issued as Patent No. 3,012,694 on December 12, 1961.

The device disclosed herein has particular utility for dispensing gas for human consumption; however, it also has utility for dispensing gases which do not support combustion such as carbon dioxide for use as a fire extinguisher.

Oxygen dispensers for human inhalation which were previously constructed were complicated and expensive to manufacture and subject to mechanical failure. The present invention discloses a self-contained oxygen dispensing and inhaling unit which is extremely simple and economical. It incorporates an improved feature which includes a piercer which also functions as a needle valve for stopping the flow of oxygen from the container and incorporates an improved venturi for mixing gas with air in combination with the device aforesaid.

Specifically, it is an object of the present invention to provide a device for dispensing oxygen and other medical gases which is simple in construction, economical to manufacture, and simple and efficient to use.

Another object of the invention is to provide an improved self-contained device for dispensing oxygen for human use.

Still another object of the invention is to provide an improved valve and piercing arrangement in an oxygen dispensing device.

A further object of the invention is to provide an improved dual container unit for dispensing oxygen.

With the above and other objects in view, the present invention consists of the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size proportions, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

FIGS. 1, 2, and 3 are longitudinal cross sectional views of oxygen dispensing devices according to the invention showing embodiments similar to those shown in the said parent application,

FIG. 4 is a cross sectional view taken on line 4-4 of FIG. 1; and

FIG. 5 is a cross sectional view taken on line 5-5 of FIG. 4.

Now with more specific reference to the drawing, FIG. 1 shows an oxygen dispensing device 10 having a hollow cylindrical body. A breathing device 11 is suitable to be held in the mouth of a person or animal. The breathing device 11 is threadably attached to the hollow cylindrical body by means of a threaded member 23 on the dispensing device having threads 12 thereon. The threads 12 are very fine of the order of approximately forty threads per inch so that a considerable rotation of the dispensing device 10 results in a small movement of the valve.

The breathing device is made up of the generally oval shaped mouth engaging member which has an outer annular peripheral contoured surface 14 thereon and an opening 15 therethrough communicating with the distal

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end thereof. The opening 15 is counterbored and threaded at 16 to receive a threaded member 17 which is integral with a flanged member 18 and which holds the breathing device 11 in place on the device 10. The flanged member 18 has an axially extending flange 19 integral therewith which overlies an end 20' of the body. The flange 19 forms a guide and a reinforcing member to hold the breathing device so that the relatively small member 23 will not be easily broken.

An axial passage 21 extends through the member 23 and the member 17 and forms a flow passage for oxygen from an inside 32 of the hollow body through the opening 15 and through the breathing device 11 to the user. The passage 21 is counterbored at 29 to receive a point 26. The point 26 is conical in shape and may be made of stainless steel so that it will not be attacked by oxygen and can be given a smooth finish and yet be hard and not be marred when it pierces and shapes the valve seat in the end of the bottle.

The point should be less than thirty degrees inclined angle so it will pierce a very tiny hole in the bottle. The point 26 has a cylindrical member 30 attached thereto and this cylindrical member is pressed into the counterbore 29 and has axial bore 31 in the periphery of the cylindrical member 30 which communicate between a space 32 inside the body and the passage 21.

A space is provided between the flanged member 18 and the upper edge surface 33 of the body so that the breathing device can be tightened down onto the body until the point 26 punctures the bottle 22. Then the breathing device can be rotated in the opposite direction to move the point out of the bottle and thereby allow oxygen to flow up through member 30 through the passage 21 and through the breathing device 11. The end of the bottle 22 is made of metal which is suitable to form a valve seat when punctured. The material of the bottle must be ductile so that it will form a valve seat.

When the user desires to temporarily discontinue the use of the oxygen, he merely needs to tighten the breathing device 11 so that the conical point 26 will seat in the opening formed in the bottle and thereby shut off the flow of oxygen from the bottle.

In the embodiment of the invention shown in FIG. 2, corresponding parts are numbered similar to those shown in FIG. 1 excepting that one hundred is added to each number. In this embodiment, a breathing member 111 has laterally extending passages 140 which communicate with an opening 115 therethrough and act as a venturi, allowing air to flow in, mixing with oxygen to deliver through opening 115 a predetermined mixture of oxygen to air. This increases the effective capacity of the device.

In the embodiment of the invention shown in FIG. 3, similar parts to those in FIG. 1 are numbered with similar numbers except two hundred has been added to each number. In this embodiment, an end 220' of the body is externally threaded to receive internal threads 231 on the inside of a flange 219 of the breathing device 211 and member 223 is cylindrical and slides in an unthreaded bore 212 in the body. O-type sealing rings 241 are disposed in grooves inside the body and provide a seal to prevent the escape of oxygen into the space between the end of the body and the breathing device 211 where it might leak out of the threads. A seal 243 is provided between the end of the body and the inside of the breathing device to direct the oxygen into the breathing device.

The foregoing specification sets forth the invention in its preferred practical forms but the structure shown is capable of modification within a range of equivalents without departing from the invention which is to be understood is broadly novel as is commensurate with the appended claims.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A device for dispensing oxygen and other medical gases comprising a hollow body, a bottle for containing gas under pressure disposed in said body, a rotatable breathing member, means attaching said breathing member to said body, said means comprising an extension member attached to said breathing member and extending into said body, a conical point on said extension member, and threaded means on said body cooperating with threaded means on said breathing member for moving said point into engagement with said bottle whereby an end of said bottle is punctured to provide an opening when said breathing member is rotated in a first direction and, at the same time, providing a seal with material around the opening thereby formed in said bottle, said breathing member being adapted to be rotated in a second direction, moving said point out of engagement with said bottle and allowing oxygen to flow therefrom, said breathing member and said extension member each having an opening therethrough communicating from the inside of said body to the distal end of said breathing member the opening in

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the breathing member and the extension member being in axial alignment.

2. The device recited in claim 1 wherein said point is connected to said extension member by means of a counterbore of said opening therethrough, said point having a cylindrical portion pressed into said counterbore, and slot in the periphery of said cylindrical portion providing a flow passage from inside said body to said opening.

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