No. 693,795. Patented Feb. 18, 1902.

E. GIERSBERG.

RESPIRATORY APPARATUS.

(Application filed May 9, 1900.)

(No Model.)

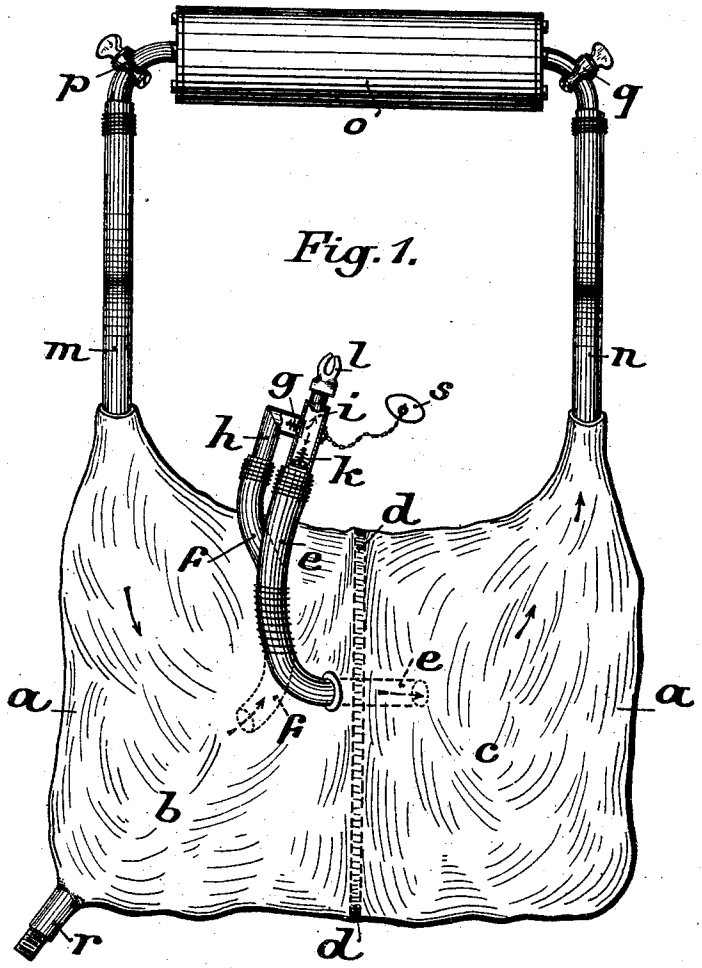


Fig. 1.

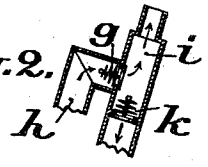


Fig. 2.

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RESPIRATORY APPARATUS.

SPECIFICATION forming part of Letters Patent No. 693,795, dated February 18, 1902.

Application filed May 9, 1900. Serial No. 16,029. (No model.)

To all whom it may concern:

Be it known that I, ERICH GIERSBERG, commander of the fire brigade, a subject of the German Emperor, residing at 41 Lindenstrasse, Berlin, Germany, have invented a certain new and useful Improvement in Respiratory Apparatus, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to respiratory apparatus, more especially to apparatus the object of which is to make a sojourn possible in places filled with foul or poisonous gases.

The apparatus consists of a bag of suitable size to be worn on the body and having two pipe connections, the one adapted to be applied to the respiratory organs and the other formed by an arrangement of the usual kind adapted to absorb the products of exhalation, more especially carbonic acid.

In the accompanying drawings, Figure 1 is a front view of the apparatus, partly in vertical section; and Fig. 2 is a detail on a larger scale.

In the accompanying drawings, *a* is an air-tight bag made of rubber-coated fabric or the like and divided into two preferably equal halves *b* and *c* by a partition-wall *d*, likewise made of air-tight fabric. Into the bag *c* a pipe *e*, preferably made of flexible material, is inserted, and into the bag *b* a similar pipe *f*. The free end of the pipe *e* is preferably provided with a forked mouthpiece *l*, adapted to be inserted into the nose in such a way as to efficiently close it, and both pipes *e* and *f* are connected by a rectangular piece *i h*. At the place where the branch *h* enters the piece *i* a valve *g* is interposed, which allows the air freely to pass from the bag *b* to the mouthpiece *l*, but prevents its passage in the opposite direction. A similar valve *k* is interposed at the entrance of the straight piece *i*, this latter valve being arranged to allow the free passage of air discharged from the mouthpiece *l* to the bag *c*, but not vice versa.

o is a cylinder made of metal or any other suitable material and filled with soda-lime or any other substance that has the property of absorbing carbonic acid. The cylinder *o* is provided at each end with a spigot or tap, (marked *p* and *q*, respectively, in the drawings,) and both ends are connected by means of pipes *m* and *n* with the two bags *b* and *c*, respectively. A plate *s* is provided, which is adapted to be tied over the mouth in order to securely close it while using the apparatus.

The bag *b* can be refilled, according to circumstances, by means of a stud *r*, closed by a suitable plug.

The operation of this arrangement is as follows: The bag *b* is filled with oxygen. When the apparatus is to be used, the mouthpiece *l* is applied to the nose, plate *s* being tied over the mouth, if necessary. Both spigots *p* and *q* are opened. As the breathing commences the products of exhalation are blown into the bag *c* and gradually proceed through the pipe *n* into the cylinder *o*, where the carbonic acid and part of the water are retained, the other gases passing on toward the bag *b*, in which they mix with the oxygen contained therein and can again be inhaled, &c., until the supply of oxygen has been used up, whereupon the bag *b* is refilled. From time to time the cylinder *o* is detached, cleaned out, and refilled with absorbing reagents.

Having now particularly described and ascertained the nature of my invention and the manner in which the same is to be performed, I declare that what I claim is—

A respiratory apparatus comprising an air-tight bag having a partition dividing it into two chambers, one for the oxygen and the other for the exhaled gas, a pipe communicating with the oxygen-chamber and a second pipe communicating with the exhaling-chamber, a rectangular piece attached to the outer ends of said pipes and forming a joint between the same, valves in said rectangular piece, the valve in the branch connected with the oxygen-chamber being adapted to permit the outlet of gas from that chamber and the one in the branch connected with the exhaling-chamber being adapted to permit the admission of gas into that chamber, a forked piece arranged on said rectangular piece

adapted to be put into the nostrils, a cylinder being adapted to contain material for absorbing carbonic-acid gas and pipes connecting said cylinder with the inhaling and exhaling chambers, whereby the gas exhaled into the exhaling-chamber can pass from thence into the inhaling-chamber by way of the cylinder containing the carbonic-acid-gas-absorbing material and will be freed from carbonic-acid gas in such passage.

In witness whereof I hereunto subscribe my name this 14th day of April, A. D. 1900.

ERICH GIERSBERG.

Witnesses:
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