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SPRING CLAMP FOR BREATHING BAGS

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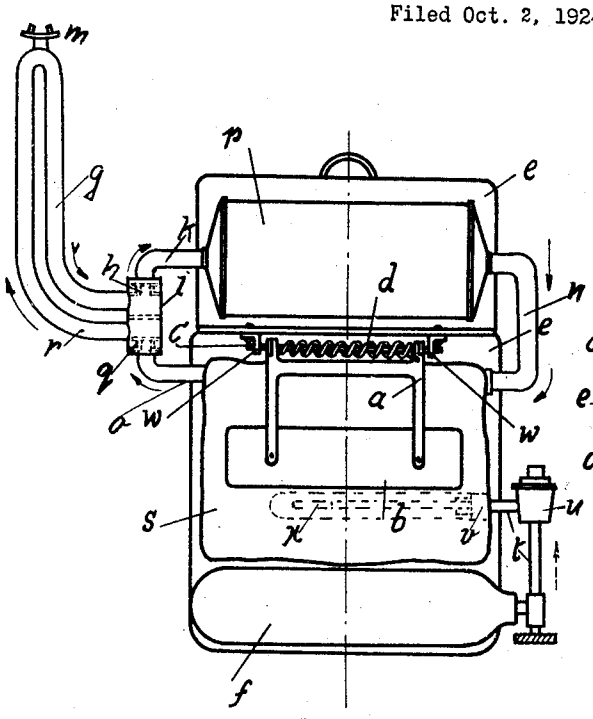


Fig. 2.

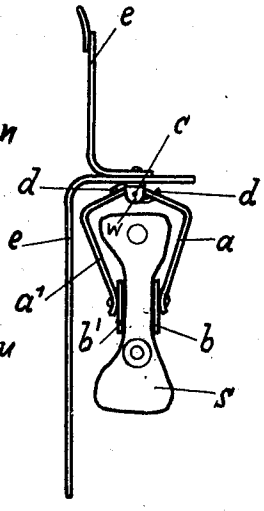


Fig. 3.

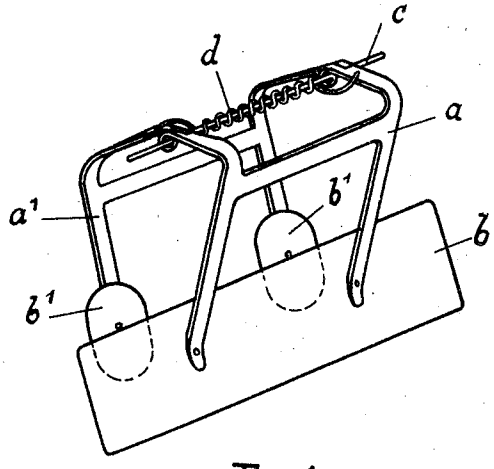


Fig. 1.

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SPRING CLAMP FOR BREATHING BAGS.

Application filed October 2, 1924, Serial No. 741,237, and in Germany November 9, 1923.

This invention relates to breathing bags to be used in connection with gas masks or similar apparatus for preventing the inhalation of noxious gases by the person wearing or using such apparatus.

The principal object of the present invention is to provide a new and improved means for automatically flattening or deflating the breathing bag to expel the contents thereof and also to maintain a positive pressure in the air circulating system and thereby prevent the exterior atmospere from leaking through any defective places in such system into the interior thereof.

Other more specific objects will be apparent to those skilled in the art, to which this invention appertains, from the following more detailed description and by reference to the accompanying drawings forming a part hereof and in which Fig. 1 is a perspective view of a spring-actuated clamping frame for deflating the breathing bag; Fig. 2 is a rear elevation of a breathing bag having the spring-actuated frame shown in Fig. 1 connected thereto, and showing somewhat diagrammatically the combination of the breathing bag with a supporting frame or carrier, with the air purifying cartridge and the oxygen container; and Fig. 3 is a side elevation of the breathing bag, spring-actuated frame and supporting frame shown in Fig. 2.

The present invention resides in the construction of the spring-actuated, clamping frame which as shown in Fig. 1 consists of a pair of similar frame halves or members a, a^1, capable of independent movement and each having a pair of downwardly extending arms, to the outer or free ends of which is secured a single pressure plate b which extends between and connects said free ends, or which may be provided with the separate pressure disks b^1. The upper ends of said frame halves are pivotally mounted upon a pivot pin c preferably having its ends extending outwardly of the pivotal connections to provide a convenient means for connecting the clamping frame to the supporting frame or carrier e. A suitable mounting for the projecting ends of the pivot pin c may consist of the angle-iron or knee brackets w secured to the supporting frame, which brackets, it will be noted, serve not only for supporting the pivot pin but also hold the frame centrally of the pin.

Any suitable resilient means may be provided for normally urging the free ends of the clamping frame into clamping engagement with the breathing bag s and as shown a spring d which is coiled about the pivot pin has its free ends bent over to engage the frame halves and urge the opposed pressure or clamping plates toward each other in a manner which will be readily understood.

Fig. 2 shows a suitable arrangement of the breathing bag between the air purifier p and the oxygen container f while Fig. 3 illustrates the manner in which the pressure plates engage the breathing bag.

The manner in which the device operates will be readily understood, the tension of the spring d being arranged to cause the pressure plates to be forced into contact with the breathing bag to deflate it and to maintain a predetermined excess or super-pressure therein during inhalation, while the resiliency of the spring permits the halves of the clamping frame to swing outwardly upon the pivot pin during exhalation. The arrangement is such that the clamping frame is supported in the apparatus of which it forms a part, independently of the breathing bag but in operative relation thereto. The breathing bag is thereby relieved from carrying any of the weight of said clamping frame without interfering in any way with the efficient operation thereof.

It will be understood that suitable connections are provided between the mouthpiece and the air purifier and the breathing bag respectively, and between the latter and the said air purifier and the oxygen container respectively.

In the example of the apparatus illustrated in Fig. 2 the mouthpiece m is connected by means of a flexible exhalation tube g, an exhalation valve h in a valve chest i and a pipe k with the inlet end of the air purifier p. The outlet end of the latter is connected by means of a pipe n with the breathing bag s. This latter is also connected by means of a pipe o, an inhalation valve q in said valve chest i and a flexible inhalation tube r with the mouthpiece m. The breathing bag is furthermore connected with the oxygen container f by means of a pipe t, a pressure reducing valve u being located in said connecting pipe t and a self-closing oxygen supply valve as indicated by dotted

lines at v is controlling the supply of oxygen into the breathing bag. A suitable lever mechanism x located within the breathing bag and indicated likewise by dotted lines, is automatically operated in well known manner by inspiration, that is to say, by the walls of the deflating breathing bag, in order to open the supply valve v, whereby oxygen is periodically supplied to the air circuit system of the apparatus in accordance with the breathing requirements prevailing at the time. As the construction and function of the said lever mechanism and of the said supply valve, as well as their actuation by the breathing bag are well known, no further explanation is needed. In Fig. 2 the course of the exhaled air is indicated by winged arrows, that of the purified air by non-winged arrows, and that of the oxygen by a dotted arrow. It will be understood that the arrangement shown in Fig. 2 is only an example of a practical utilization of the invention. It will also be understood that various changes, and modifications of the details of construction herein disclosed may be resorted to without departing from the spirit of my invention.

I claim:

1. In a breathing apparatus, the combination of a supporting frame, a breathing bag mounted thereon, and a clamping device pivotally suspended from said frame independently of said bag and having free ends adapted to exert a resilient compression on opposite faces of said bag.

2. In a breathing apparatus, the combination of a supporting frame, a breathing bag mounted thereon, and a clamping device pivotally suspended from said frame independently of said bag, and comprising pivoted jaw members, pressure plates on said jaw members adapted to engage opposite faces of said bag, and resilient means for urging said plates toward each other.

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