

PATENT SPECIFICATION (11)

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(21) Application No. 41297/75 (22) Filed 8 Oct. 1975

(23) Complete Specification filed 23 Dec. 1976

(44) Complete Specification published 8 May 1980

(51) INT. CL.⁸ A45F 3/08

(52) Index at acceptance
A3V 9B2A

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(71) We, SUBMARINE AND SAFETY ENGINEERING LIMITED, a British company, formerly of Daux Road, Billingshurst, Sussex, now of Industrial Estate, Bognor Regis, Sussex, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to breathing apparatus provided with a body harness to permit the apparatus to be carried securely on the back of the wearer.

Breathing apparatus according to the present invention, comprises a frame to be carried on the back of the wearer and having upper and lower portions that are slotted and a body harness including a single strap which passes through a first buckle on one side of the apparatus and extends from the first buckle through a slot in one of the said two portions of the frame, thence through the first buckle again and through at least one slot in the other of the said portions of the frame, and thence through a second buckle on the other side of the apparatus and through a further slot in the said one frame portion, from which the strap extends back to and passes through the second buckle, whereby superimposed portions of the strap extend to and from each of the buckles.

In conventional arrangements employing a pair of straps extending from the top and bottom of the harness respectively, one strap passing through a buckle on the other strap, the strap is normally held in position by the friction involved in its passage through the buckle and release of the strap to allow movement of the buckle is effected by turning the buckle out at an angle to the direction of the strap run. A disadvantage of this is that the buckle can be turned out accidentally, as a consequence of catching on a projection, and the strap may thus be released unintentionally. Such accidental release can be very dangerous in a hazardous situation of the kind in which breathing apparatus is used. In apparatus embodying the present

invention, the two superimposed runs of the single strap passing through each buckle are required to move in opposite directions for release to occur and the friction is such that even if the buckle is accidentally turned outwards, the strap does not release.

It will be appreciated that the positions of the buckles on the shoulder straps are not normally adjusted during use of the apparatus but are pre-adjusted to suit the wearer.

The fact that each shoulder strap is in the form of a single piece also reduces the need for sewing, riveting or bolting. Where the two shoulder fastenings are formed by a single strap, there is no need for any sewing, riveting or bolting, as the two ends are held by the buckles.

In order that the invention may be better understood, one example of apparatus embodying the invention will now be described with reference to Figures 1 and 2 of the accompanying drawings.

In the drawings, a breathing apparatus is formed with a back frame 1 and a body harness comprising a strap to pass over both shoulders of the wearer, a waist strap and an optional chest strap. From its end 2, the shoulder strap passes through the buckle portion 3a and then downwards in a run 4a to a slot 5 in a lower portion of the frame 1. From the slot 5, the strap returns in a run 4b to the buckle portion 3b. From the buckle it extends (over the right shoulder of the wearer, when the apparatus is in use) to slots 6, 7, 8 and 9, in that order, in the upper portion of the frame 1. From the slot 9 the strap passes (over the left shoulder of the wearer, when the apparatus is in use) through a portion 10b of a buckle on the other side of the apparatus, from which buckle a strap run 11a then extends to a slot 12 in the lower portion of the frame 1. The strap passes through the slot 12 and extends in the form of a run 11b to the buckle portion 10a, from which emerges the opposite end 13 of the strap. The strap is preferably a piece of webbing. It will be seen from the drawings that there are superimposed portions of the strap on the lower side of each

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buckle and these portions would be required to move in opposite directions for a slippage to occur. Tension in the webbing when the apparatus is being worn locks the component parts in position.

Such an arrangement allows adjustment of the shoulder straps for different wearers whilst avoiding all permanent fixings and has the merit of great strength and constructional simplicity.

The waist strap 14 is also in the form of a single piece of webbing.

A chest strap 15 (see Figure 2) fixes between an extension 3c of the buckle portion 3b and an extension 10c of the buckle portion 10b and fastens, as shown in Figure 2, by means of a press stud 16. The purpose of the chest strap is to draw the shoulder straps together at the front and so prevent possible chafing around the armpits of the wearer.

WHAT WE CLAIM IS:—

1. Breathing apparatus comprising a frame to be carried on the back of the wearer and having upper and lower portions that are slotted and a body harness including a single strap which passes through a first buckle on one side of the apparatus and extends from the first buckle through a slot in one of the said two portions of the frame, thence through the first buckle again and through at least one slot in the other of the said portions of the frame, and thence

through a second buckle on the other side of the apparatus and through a further slot in the said one frame portion, from which the strap extends back to and passes through the second buckle, whereby superimposed portions of the strap extend to and from each of the buckles.

2. Breathing apparatus in accordance with claim 1, wherein the said one portion of the frame is the lower frame portion whereby the superimposed portions of the strap extending to and from each buckle extend thereto from below and downwardly therefrom, respectively.

3. Breathing apparatus in accordance with claim 1 or 2, further including a waist strap in the form of a single piece of webbing passing through slots in the said lower frame portion.

4. Breathing apparatus in accordance with claim 1, 2 or 3, wherein the two buckles on opposite sides of the apparatus are formed with extensions between which a chest strap is connected.

5. Breathing apparatus comprising a body harness substantially as herein described with reference to the accompanying drawings.

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(10)



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through a second buckle on the other side35 of the apparatus and through a further slot in the said one frame portion, from which the strap extends back to and passes through the second buckle, whereby superimposed portions of the strap extend to and from each of the buckles. 40

2. Breathing apparatus in accordance with claim 1, wherein the said one portion of the frame is the lower frame portion whereby the superimposed portions of the strap extending to and from each buckle extend thereto from below and downwardly therefrom, respectively. 45

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