

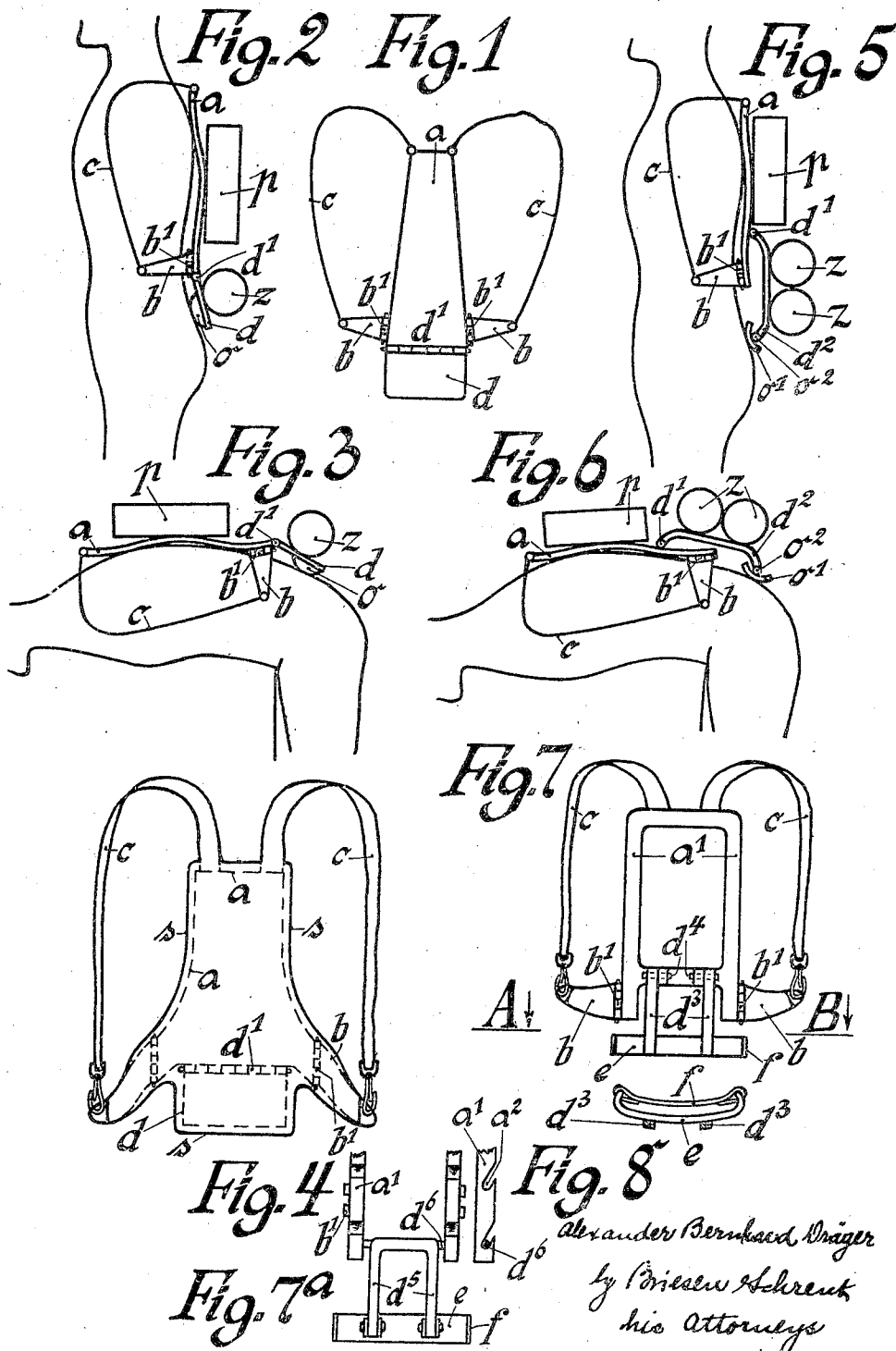
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SUPPORTING FRAME FOR SELF CONTAINED BREATHING APPARATUS

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SUPPORTING FRAME FOR SELF-CONTAINED BREATHING APPARATUS.

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To all whom it may concern:

Be it known that I, ALEXANDER BERNHARD DRÄGER, a citizen of Germany, residing at Lubeck, Germany, have invented certain new and useful Improvements in Supporting Frames for Self-Contained Breathing Apparatus, of which the following is a specification.

The frames hitherto known which have been worn on the back as supports for free portable or self-contained breathing apparatus have the admitted disadvantage, that when the body of the wearer is in certain positions the said supporting frames cause the breathing apparatus to project bulky or awkwardly from the body of the wearer and the apparatus can therefore easily become fatal to the wearer in narrow galleries, pits, rooms, etc.

By means of the present invention a supporting frame is produced which clings or adapts itself as close as possible to the configuration of the body when the latter is in an inclined forward and downward position, and which frame when in such clinging or fitting position, distributes at the same time the weight of the several parts of the apparatus supported by the said frame, in an appropriate and comfortable manner over the body.

These advantages are obtained by the fact that the supporting frame is composed in longitudinal or vertical direction of two or more rigid parts articulated or hinged one to the other so that the said parts of the frame are adapted, owing to the hinged or flexible character of their joints, to perform a swinging motion with respect to one another and thus to follow the varying configuration of the body of the wearer.

The invention can be carried out in practice in a number of ways, and may be modified to suit any particular requirements. Several modes of construction are shown as examples on the accompanying drawing in which:—

Fig. 1 is a diagrammatic rear view of a supporting frame constructed in accordance with and embodying the invention, as it appears, when extended flat on the ground.

Fig. 2 is a diagrammatic side view of the supporting frame applied to the back of a wearer and provided with a self-contained breathing apparatus of any suitable type.

Fig. 3 is a similar view showing the parts of the frame and apparatus in the positions

they occupy when the body is in a well-inclined forward and downward position.

Fig. 4 is a back or rear view of a supporting frame of somewhat modified outfit, extended flat on the ground.

Figs. 5 and 6 are representations similar to Figures 2 and 3 but illustrating a modified form of the supporting frame.

Fig. 7 is a similar view as Fig. 4 but showing a further modification of the supporting frame, the breathing apparatus being likewise removed.

Fig. 7^a is a similar view as Fig. 7 showing a modified form of hinge connection between the two frame parts.

Fig. 8 is a sectional view taken at the line A—B of Fig. 7 showing a plan of the lower part hinged to the upper part of the supporting frame represented in Fig. 7.

As will be seen from Figures 1 and 2 the supporting frame mainly consists of an upper part or main section *a*, (preferably a suitably formed and curved sheet iron plate) of side arms *b* hinged thereto at *b*¹, and of a lower part or auxiliary section *d* articulated to the part *a* by a hinge *d*¹ or the like. The part *d* may be provided with a suitable pad *o* or the like. Suitable shoulder straps *c* being attached to the upper corners of the part or main section *a* and adapted to be connected to the free ends of the side arms *b*.

The side arms *b* instead of being articulated or hinged to the part *a* by means of hinges *b*¹, may also be rigidly attached to the said part *a*.

The self-contained breathing apparatus, the greatest weight of which is generally constituted by the oxygen cylinder *z*, is so distributed or disposed over the whole supporting frame, that the oxygen cylinder is secured to and rests on the auxiliary section or lower flap-like part *d*, whilst the remaining parts of the apparatus, comprised and indicated in the drawing as a quadrangle *p*, are arranged on and secured to the upper part or main section *a* of the supporting frame. The main weight to be supported rests therefore by means of the flap *d* and the pad *o* at its inner surface upon the lower back of the wearer, as is evident from the upright position (Fig. 2) and the forward inclined position (Fig. 3).

When two or more oxygen cylinders *z* are used (Figs. 5 and 6) the connection of the auxiliary section or lower part *d*² to the main section or upper part *a* may be per-

formed in such a manner that the two parts or sections do not only allow of a swinging motion with respect to each other, but also an adjustment in the longitudinal or vertical direction, in order to set the lower part d^2 at a higher or lower level relative to the upper part a . As connecting means allowing of such double adjustment (swinging and adjusting in height) are well known to persons skilled in the art, no further explanation of the said connecting means is necessary. It suffices to refer to Figure 7^a to be explained further below.

As shown in figures 5 and 6 instead of providing the flap-part d^2 with a pad on its inner face, it may be equipped with an equivalent cushioning means in the form of a movable member O^1 (curved plate or the like) hinged to the lower edge of the part d^2 .

It is advisable to provide the upper part a , its side arms b and the lower part d of the supporting frame, when made of sheet iron plates, with a covering s of any suitable material, such as fabric, leather or the like. In Fig. 4 is shown such a covered supporting frame.

According to the modification shown in Figure 7 the upper part of the supporting frame is made of suitable metal bars, rods or the like in the form of an inverted stirrup a^1 to the depending legs of which are hinged at d^4 the legs d^3 of the lower part constructed likewise in the form of a stirrup $d^3 e$. The ends of the horizontal cross bar e somewhat projecting beyond the legs d^3 , are slightly curved towards the body of the wearer. A leather belt f (strap or the like) connecting the free ends of the cross bar e (Fig. 8) serves in this construction as the back-member or back-rest proper.

In the modified construction of Fig. 7^a the depending legs a^1 of the upper part are provided each with a series of inclined slots a^2 adapted to take up the journals or trunnions d^6 of the lower frame part $d^5 e f$. When it is desired or required, to adjust the position of the constituent frame parts relatively to each other, it is only necessary to disconnect the lower frame part from the upper one and to suspend it from the appropriate set of slots a^2 .

I claim:

1. A support for portable breathing apparatus comprising a plurality of rigid sections, each constituting a carrying medium for parts of the breathing apparatus and movably connected with each other in a manner to permit said support to automatically conform to the body of the wearer and to the bodily movements of the same, and means for suspending said support upon the back of said wearer.

2. A support adapted to be worn upon the human back for carrying a portable breath-

ing apparatus comprising a main section, an auxiliary section movably connected therewith whereby said support conforms to the body of the wearer and to the bodily movements of the same, each section constituting a carrying medium for parts of the breathing apparatus, members movably connected with said main section and embracing the sides of the wearer, and means connected with said members and with said main section for suspending said support upon the back of said wearer.

3. A support adapted to be worn upon the human back for carrying a portable breathing apparatus comprising a main section of rigid material, an auxiliary section of rigid material pivotally connected with said main section whereby said support conforms to the body of the wearer and to the bodily movements of the same, each section constituting a carrying medium for parts of the breathing apparatus, and means for suspending said support upon the back of said wearer.

4. A support adapted to be worn upon the human back for carrying a portable breathing apparatus comprising a main section of rigid material, an auxiliary section of rigid material pivotally connected with said main section whereby said support conforms to the body of the wearer and to the bodily movements of the same, each section constituting a carrying medium for parts of the breathing apparatus, side arms being pivotally connected with said main section and embracing the sides of the wearer, and shoulder straps connected with said side arms and main section for suspending said support upon the back of said wearer.

5. A support adapted to be worn upon the human back for carrying a portable breathing apparatus comprising a main section of rigid material, an auxiliary section of rigid material depending freely from said main section along the body of the wearer and pivotally connected with said main section to follow the bodily movements of said wearer, each section constituting a carrying medium for parts of the breathing apparatus, cushioning means carried by said auxiliary section for engagement with the body of said wearer, and means for suspending said support upon the back of the wearer.

6. A support adapted to be worn upon the human back for carrying a portable breathing apparatus comprising a plurality of rigid sections arranged to extend lengthwise of the body of the wearer and each constituting a carrying medium for parts of the breathing apparatus, said sections being pivotally connected to conform to the body of the wearer and to the bodily movements thereof and being adjustable lengthwise of each other, and means for suspending said support upon the back of the wearer.

7. A support adapted to be worn upon the human back for carrying a portable breathing apparatus comprising a rigid main section provided with a plurality of groups of slots, a rigid auxiliary section forming a continuation of said main section, both sections constituting carrying mediums for parts of the breathing apparatus, trunnions on said auxiliary section adapted to fit into said groups of slots whereby said auxiliary section is pivotally connected with said main section to conform to the bodily movements of the wearer and is adjustable lengthwise of said main section, and means for suspending said support upon the back of the wearer.

8. A support adapted to be worn upon the human back for carrying a portable breathing apparatus comprising a rigid main section provided with a plurality of groups of slots, a rigid auxiliary section forming a continuation of said main section, both sections constituting carrying mediums for parts of the breathing apparatus, trunnions on said auxiliary section adapted to fit into said groups of slots whereby said auxiliary

section is pivotally connected with said main section to conform to the bodily movements of the wearer and is adjustable lengthwise of said main section, side arms pivotally connected with said main section and adapted to embrace the sides of the wearer, and shoulder straps connected with said main section and side arms for suspending said support upon the back of said wearer.

9. A support adapted to be worn upon the human back for carrying a portable breathing apparatus comprising a main section, an auxiliary section movably connected therewith whereby said support conforms to the body of the wearer and to the bodily movements of the same, each section constituting a carrying medium for parts of the breathing apparatus, members movably connected with said main section and embracing the sides of the wearer, means connected with said members and with said main section for suspending said support upon the back of said wearer, and a flexible covering enclosing said sections and members.

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