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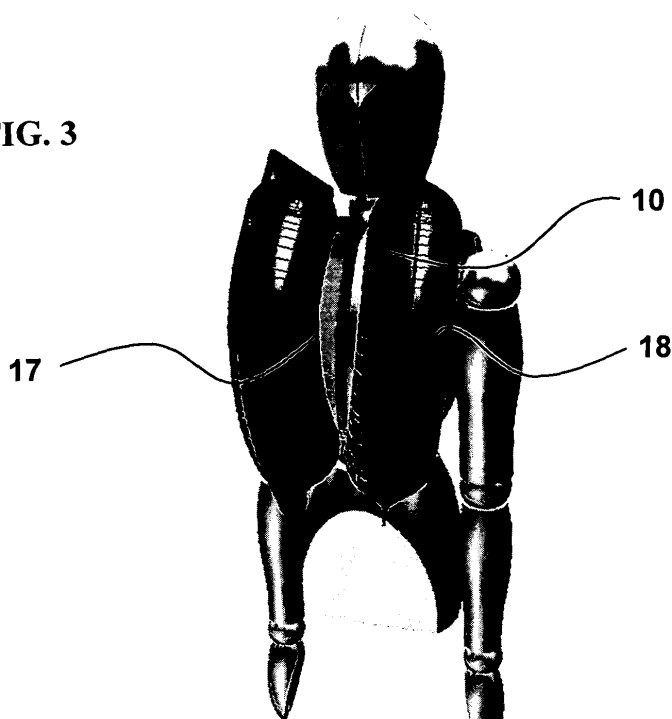
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(54) **Inflatable anti-avalanche garment**

(57) The invention relates to an anti-avalanche clothes which can be worn by the persons, and is constituted preferably but not within limits by a short jacket provided with inflatable elements adapted to deaden the blows, and to defend the face in case of fall of avalanches, and also to maintain an air quantity enough to let the buried person to survive for a longer duration, until the help arrival. This is obtained by providing a short jacket (10) with air-bags or cushions (17,18) which can be inflated by a suitable control or automatically, which are

adapted to increase the virtual volume of the person being buried, in a manner that such volume be able to protect the head and ensure a space for making available a greater air quantity so as to guarantee a longer survival time. Finally, the coupling of this clothes with a radio turned on by the air-bag operating system will make easier the helps for finding the unlucky person. Finally, a progressive slow deflation of the cushions will allow the unlucky person to recover spaces for the movement, so as to be able to actuate a small cordless telephone or to attempt to reach the outer air.

FIG. 3



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Description

[0001] The invention relates to an anti-avalanche clothes adapted to safeguard the persons from any possible fall of avalanches, in a way to permit these persons to survive a longer duration in the case in which they are buried under avalanches formed on the mountains and moved away therefrom, such clothes being adapted to deaden the blows caused by avalanche fallings, by protecting the face and maintaining as well an air quantity enough to breathe and let the person buried under the avalanche to survive until the help arrivals.

[0002] Problems which particularly the skiers may incur when they are run over by an avalanche are known. Generally, these skiers are forewarned of the danger by the noise generated by snow being moved, but at this point often there is no time for reaching the safety areas.

[0003] From the state of the art there are known warning systems emitting a radio signal to make easier the search the person or persons being victims of an avalanche, but the time in which the buried person must be discovered and unearthed from the snow is too short, generally not more than 20 minutes, since the experience in the matter has revealed that the trapped air is enough for the breathing of the person for this maximum duration, over which it is practically impossible the survival of the same person, and under these circumstances often this time is too short for permitting the arrival of help, locating the buried body and unearthing it, and often the body appears to be completely enclosed by the overlying snow mass and the victim is absolutely blocked and therefore any manoeuvre of self-help and co-operation with the help units is prevented.

[0004] Therefore, the object of the invention is to provide for anybody being penetrated in territories with risk of avalanches with a clothes permitting to increase considerably the survival times of the persons buried under the avalanches, allowing them to breathe air, when waiting the arrival of helps for extracting the same persons therefrom.

[0005] This object is attained with an anti-avalanche clothes made with the constructive characteristics substantially described, with particular reference to the enclosed claims of the present patent.

[0006] The invention will be better understood from the following description, given by way of not-limiting example and with particular reference to the accompanying Figures of the present patent, wherein :

- Fig. 1 shows a schematic front view of the anti-avalanche clothes worn by a person, as normally it appears and is arranged to safeguard the person, in the case in which he is buried under an avalanche ;
- Fig. 2 shows a schematic front view of the manner in which the person may act on to the present anti-avalanche clothes, for preparing himself to face an emergency situation ;
- Fig. 3 shows a schematic front view of the manner

in which the present anti-avalanche clothes does appear immediately after having been actuated on an emergency situation ;

- Fig. 4 shows a schematic front view of the manner in which the person must preferably arrange himself immediately before being run over by the moving snow mass.

[0007] In the above mentioned Figures, the anti-avalanche clothes according to the invention is schematically illustrated, which is adapted to be worn by the persons like skiers, trippers etc.. passing through mountains ways under risk of avalanches falls, and this for permitting a survival of longer duration in the case in which these persons are buried under avalanches moved away from the same mountains, thanks to the fact to dispose on the one hand of a greater quantity of air for breathing under the snow mass, thereby allowing the helps to arrive in time to discover and unearth the same persons, and on the other hand to deaden the blows caused by the avalanches falls and to protect the face of the buried persons. As visible from these Figures, the anti-avalanche according to the invention is constituted substantially by a short jacket 10 (see Fig. 1) which can be worn by each person, and is provided with at least two front pockets 11 and 12 adapted to contain some air-bags or similar containers on a rest condition thereof, which are folded in the interior of these pockets, which air-bags are connected through suitable conduits with compressed gas bottles 13 and 14, such as preferably but not within limits the compressed oxygen, such conduits being secured on and supported by the short jacket 10. Said bottles are closed by stoppers or the like, which can be operated by means of snap-on controls 15 and 16 (see Fig. 2), such as for a not limiting example similar or identical to those used for inflating the life preservers for line air planes or other not shown devices, able to operate automatically said devices, for example in the case of violent movements or by voice actuated means or still other means not requiring mechanical actions.

[0008] The solution to inflate the air-bags through explosives, similar to the systems used in the motorcars, still not departing from the patent claims and being functional, is not practical in that it tends to reduce the oxygen of the air introduced into the air-bags. As soon as the control devices of the bottles 13 and 14 are operated, the compressed gas coming out therefrom provides for inflating at least two air-bags or cushions 17 and 18 housed into the relative pockets 11 and 12 (see Fig. 3), and the consequent coming out of these air-bags or cushions from such pockets through the appropriate openings 19-20 of the short jacket 10, which are normally closed by way of not limiting example by a "Velcro" fabric hook-and-loop fastener. The volume of each inflated air-bags or cushions 17 and 18 will be preferably not less than 20 litres. At this point, the position that the person preferably should take on will be that reproduced in the Fig. 4, namely with the bent head 21 and then with the face placed

between the two inflated air-bags or cushions 17 and 18, so as to protect from the snow the nostrils and the mouth, and by placing also the forearms 22 and the hands 23 along the inflated air-bags or cushions 17 and 18 it will be spontaneous to push mutually with these limbs said inflated air-bags or cushions, thereby providing for closing frontally the space existing therefrom and obtaining a protected volume 24 in which a certain air quantity is collected and trapped, which is enough to guarantee the person to breathe for a time longer than that possible at the present time, and such as to permit the buried person to survive a longer time when waiting the helps.

[0009] In the case in which the air-bags or cushions 17 and 18 are provided with calibrated holes, not shown, such air-bags or cushions will be deflated more slowly, under the weight of the snow mass, and therefore a larger volume will be available for the buried body, permitting this body to effect small movements which may help the unlucky person to try to help by himself.

[0010] It is to point out that in certain danger situations it is often possible that the person attempting to escape the falling avalanche may reach at least the sides of the area invested by the avalanche, before being invested and buried by the great snow mass. Then, in this case the overlying snow layer might be enough thin to allow some movement possibilities to the buried person, which might even permit him to reach the free air. Besides, in accordance to the invention, the inflatable air-bags or cushions may be also coupled with a transmitter-receiver apparatus, operable by the actuation system of the same air-bags or cushions, so as to make easier the buried person to be located and helped. A small pocket, not shown, provided on the short jacket 10 or on the same inflated air-bags or cushions, will permit to insert a small cordless telephone which can be reached with the hands, which under these conditions are free to actuate it and thereby to make easier to found and help the buried person. It is to be considered that, since the person head is into contact with the air-bags or cushions, these latter will deaden a lot of blows, so as to diminish also the danger of fainting fit and therefore making easier all the above described operations. Moreover, into such further pocket it might be inserted a heat source, in order to allow, when the same is turned on, to melt the overlying snow and to make easier the extraction of the person from the snow mass.

Claims

1. Anti-avalanche clothes, adapted to safeguard the persons from any possible fall of avalanches on mountains areas, **characterized by** at least a short jacket (10) which can be worn by each person, and is provided with inflatable elements (17, 18) adapted to increase the volume of the person body being invested by the snow, so as to defend at least the face, to deaden the pressures generated by the moving

snow and preserving an air volume enough to breathe for enough long times, such as to increase the survival possibility when waiting the helps ; said inflatable elements (17, 18) being supplied with gas or other expandable means, preferably but not necessarily compressed gas, contained into container means (bottles 13, 14) secured on and supported by said short jacket (10) and which can be replaced and/or recharged again.

2. Anti-avalanche clothes according to claim 1, **characterized in that** said inflatable elements are constituted by at least two inflatable air-bags or cushions (17, 18), arranged and contained into corresponding pockets (11, 12) of said short jacket (10) and supplied with said gas or other expandable means by snap-on controls (15, 16) or means of other kind.

3. Anti-avalanche clothes according to claim 2, **characterized in that** said controls and means inflating said inflatable elements (17, 18) are operated by means of automatic systems and/or sound activated control means.

4. Anti-avalanche clothes according to claim 3, characterized also by automatic systems able to emit radio, sound, olfactory etc.. warn signals when said inflatable elements (17, 18) are filled and inflated.

5. Anti-avalanche clothes according to claims 1-4, **characterized in that** said container means (13, 14) contain oxygen or other gas fit to breathe.

6. Anti-avalanche clothes according to claims 1-5, **characterized in that** said inflatable elements (17, 18) have discharge calibrated holes, adapted to guarantee the progressive deflation thereof, so as to allow the person buried under the snow mass to recover some spaces for the movement, even if partial, at least of the arms and the hands.

7. Anti-avalanche clothes according to claims 1-6, **characterized in that** said short jacket (10) has a pocket adapted to house a small cordless telephone, so as the buried person can operate it to call for the helps.

8. Anti-avalanche clothes according to claims 1-7, **characterized in that** said short jacket (10) has a pocket adapted to house a heat generator, so as the buried person can operate it to reach more easy the free air.

FIG. 1

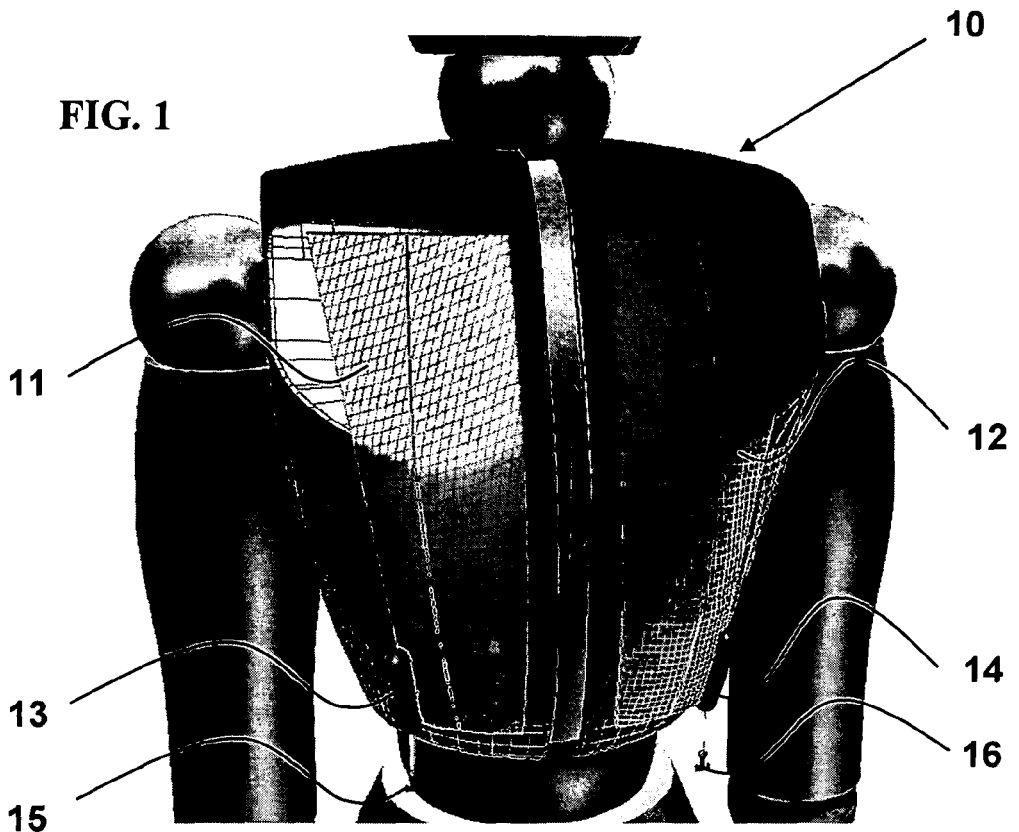


FIG. 2

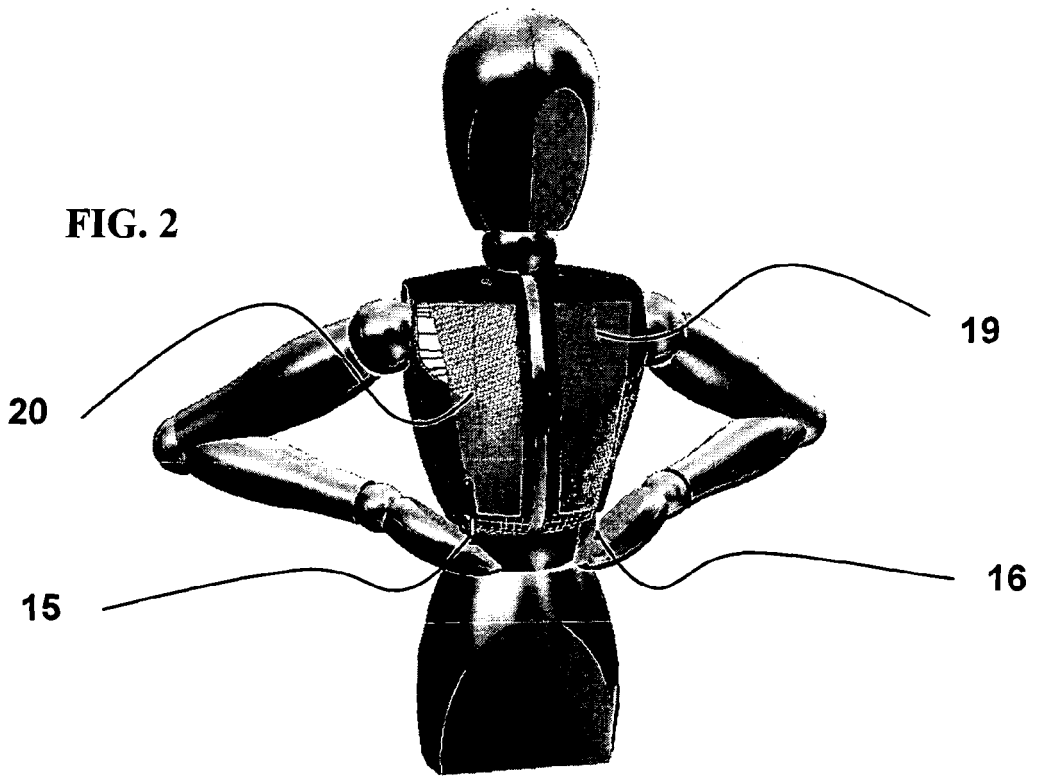


FIG. 3

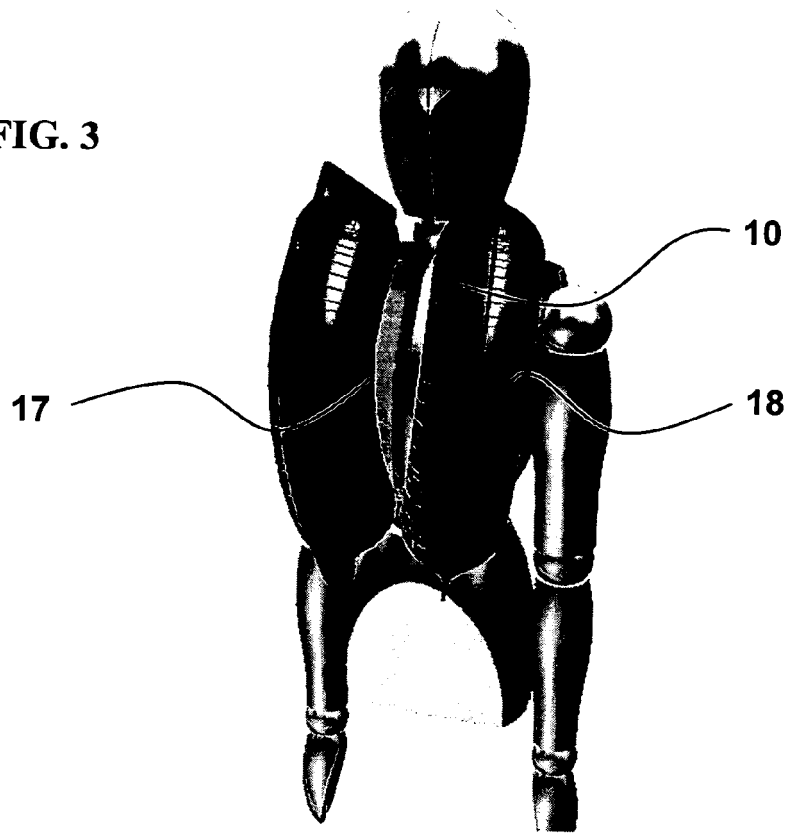
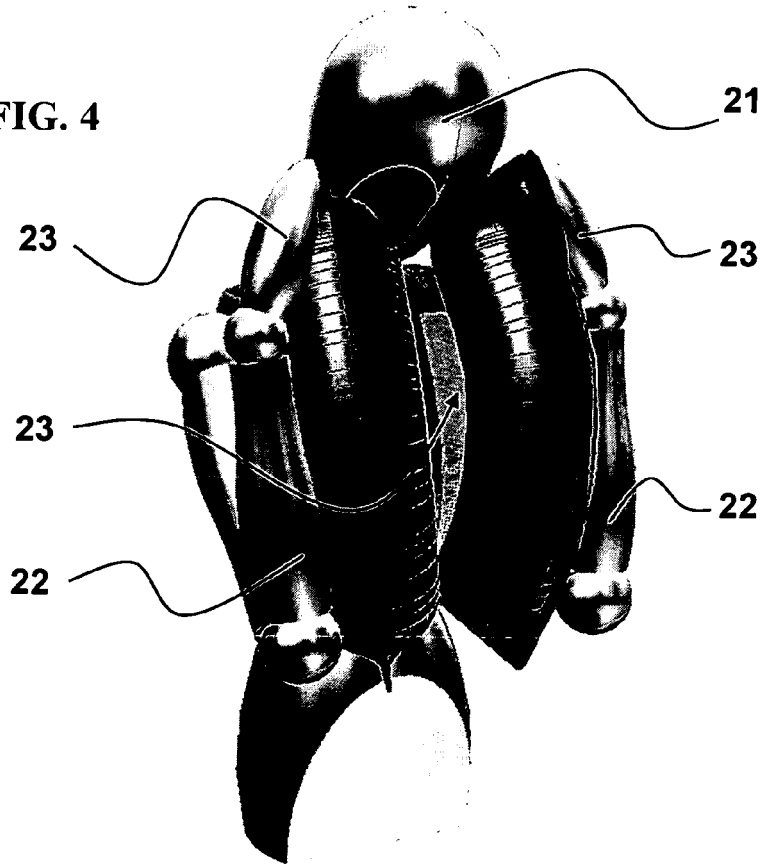


FIG. 4





European Patent
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Application Number
EP 07 00 9688

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