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64 Improvements in or relating to protective garments.

67 A protective garment is provided with means for recirculating the gases within the microclimate existing within the garment through a water/water vapour absorbent/adsorbent material.

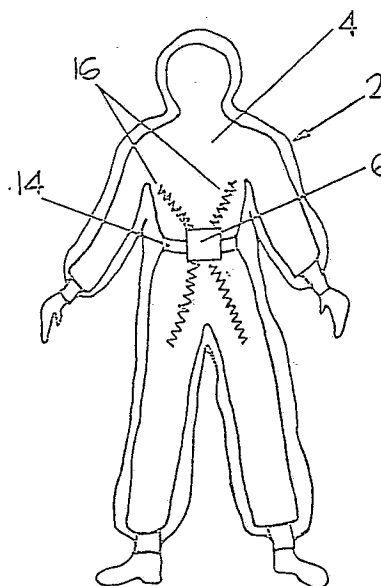


FIG 1

Description

IMPROVEMENTS IN OR RELATING TO PROTECTIVE GARMENTS

This invention concerns improvements in or relating to protective garments of the kind employed in contaminated environments.

Protective garments are widely used to prevent the interchange of contamination between the wearer's body and the environment. Currently the performance of protective garments is limited by such mechanisms as contaminant penetration of the garment's fabric, seams, fasteners or of the seals between the garment and the body. The control of such penetration is limited to the body's critical requirement to lose the heat generated by metabolic process and this requirement increases with the work rate of the wearer. A minor restriction in the heat loss ability can cause discomfort and a possible reduction in the wearer's mental and physical efficiency. A major restriction can result in excessive sweating, coma or death. When excessive sweating occurs, the relative humidity in the microclimate between the garment and the wearer's body approaches 100 per cent. Consequently, sweat evaporation, the major mechanism by which the body loses heat, largely ceases, and heat storage by the body begins.

An object of the present invention is to provide a means of reducing the possibility of the body storing heat and thereby effecting an improvement in the wearability of the garment in contaminated environments.

According to the invention there is provided a protective garment having a means for recirculating gases from the microclimate within the garment through a water/water vapour absorbent/adsorbent material thereby to reduce the relative humidity in the microclimate to permit further evaporation.

The means for recirculating gases and the absorbent/adsorbent material may be located outside the garment thus permitting heat to be rejected to the environment.

The material may conveniently be held within a canister which may in use be cooled by heat exchange with a suitable cooling medium. As an alternative, the material may contain matter which reacts endothermically with water/water vapour. Alternatively or in addition, active cooling devices such as Peltier Effect Diodes may be provided to cool the gases from the microclimate.

The means for recirculating the gases together with the cooling arrangements may be located within the garment.

By way of example only, one embodiment of protective garment according to the invention is described below with reference to the accompanying drawings in which:

Figure 1 is a diagrammatic representation of the protective garment; and

Figure 2 is a diagrammatic representation of a detail shown in Figure 1.

Referring to the drawings, a protective garment is shown generally at 2 and comprises a one piece suit which encapsulates most of the wearer's body 4 as

illustrated, with appropriate sealing provided adjacent the ends of the limbs.

Located within the volume of the garment 2 is a self-contained unit 6 incorporating a fan 8 for recirculating gases within the garment, a canister 10 containing water/water vapour absorbent/adsorbent material, and a power source, for example a battery pack 12. The unit 6 is conveniently carried as on a belt 14 by the wearer. Additionally, but optionally, ducts 16 may be connected to the fan 8 for distributing the dried air within the garment.

In operation, the microclimate atmosphere gases are continuously circulated within the garment by the fan 8 and in so doing come into contact with the water/water vapour absorbent/adsorbent material in the canister 10 wherein their moisture content is removed to give a dry air, thus making the garment more comfortable to wear.

Claims

1. A protective garment characterised by a means (8) for recirculating gases from the microclimate within the garment (2) through a water/water vapour absorbent/adsorbent material thereby to reduce the relative humidity in the microclimate to permit further evaporation.

2. A garment according to Claim 1 characterised in that the means (8) for recirculating gases and the absorbent/adsorbent material are located outside the garment (2) thus permitting heat to be rejected to the environment.

3. A garment according to Claim 1 characterised in that the means (8) for recirculating gases and the absorbent/adsorbent material are located within the garment (2).

4. A garment according to any one of claims 1, 2 or 3 characterised in that the absorbent/adsorbent material is held within a canister (10) which is in use cooled by heat exchange with a suitable cooling medium.

5. A garment according to any one of the preceding claims characterised in that the absorbent/adsorbent material contains matter which reacts endothermically with water/water vapour.

6. A garment according to any one of claims 3, 4 or 5 characterised in that cooling devices are provided to cool the gases from the microclimate.

7. A garment according to claim 6 characterised in that the cooling devices are Peltier Effect Diodes.

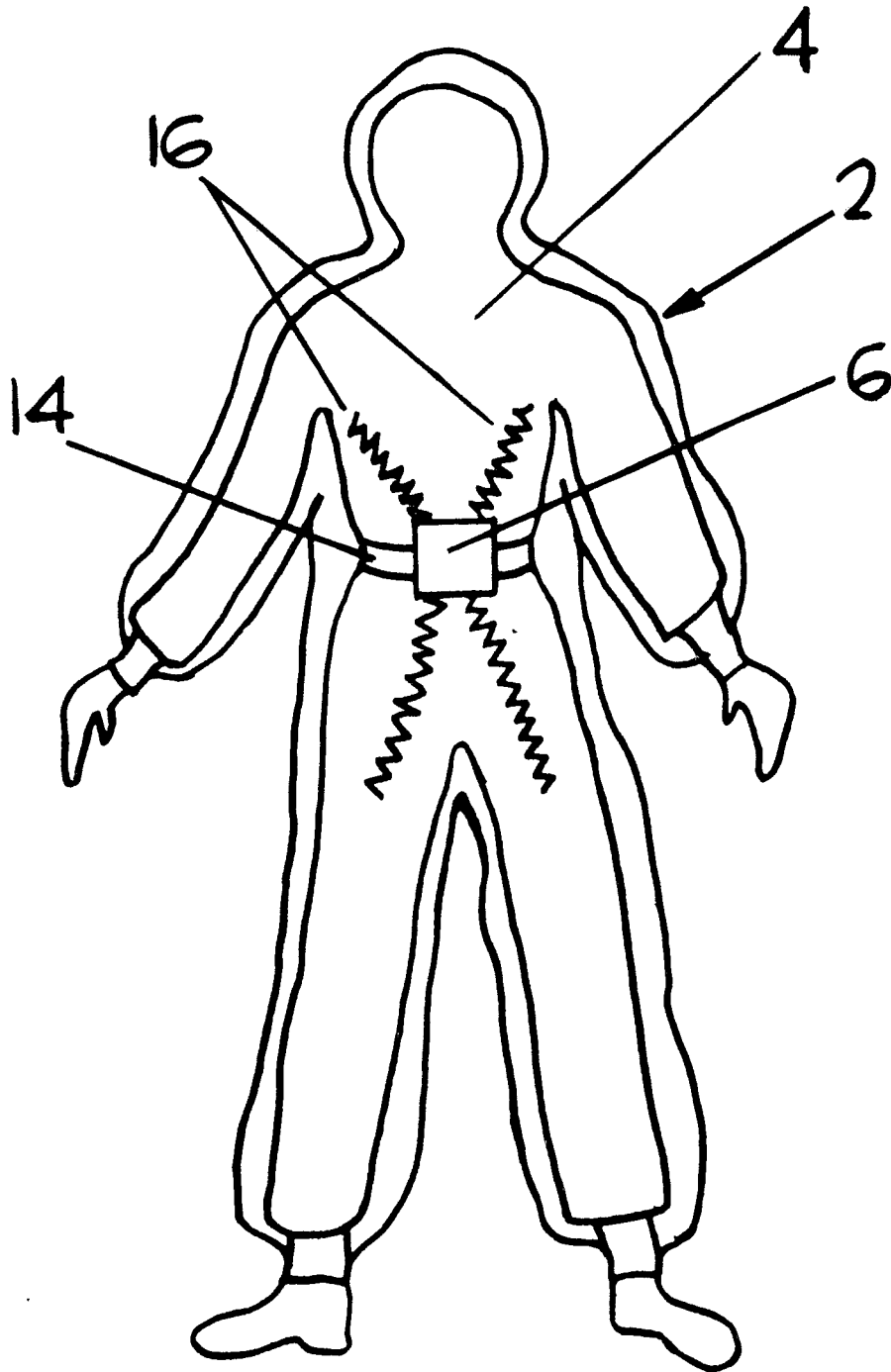


FIG 1

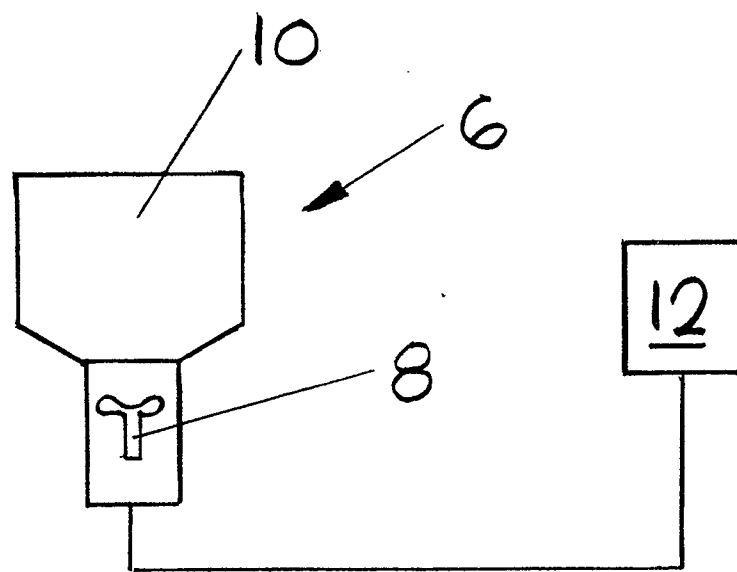


FIG 2