March 18, 1958 A. KAHN 2,826,758

VENTILATED CLOTHING AND APPARATUS

Filed Dec. 15, 1955

Fig. 1.

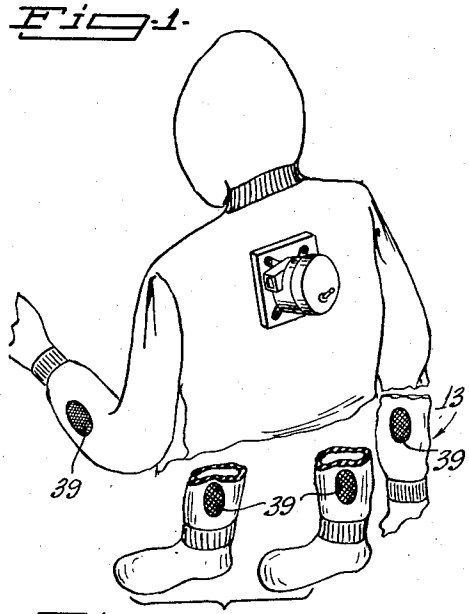


Fig. 3.

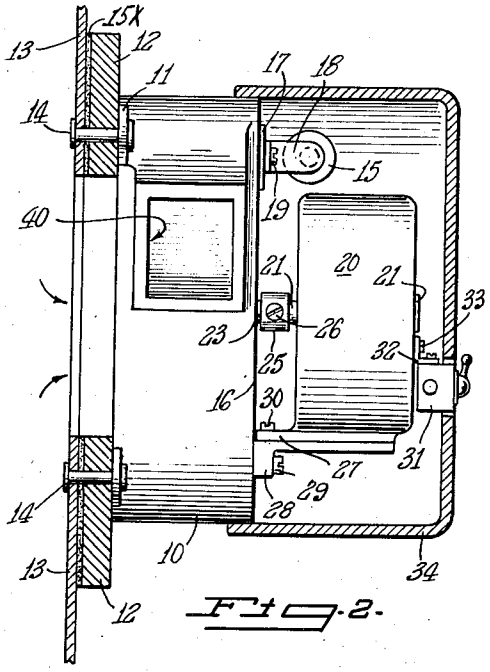


Fig. 2.

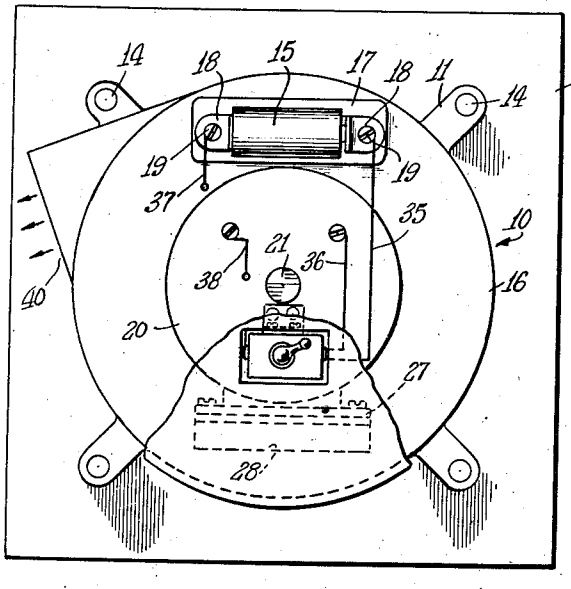


Fig. 4.

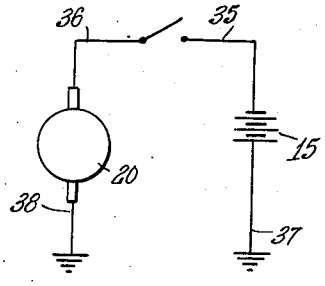
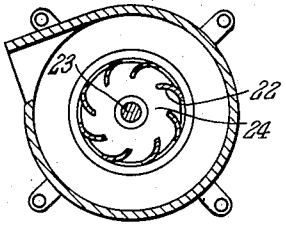


Fig. 5.



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VENTILATED CLOTHING AND APPARATUS

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Application December 15, 1955, Serial No. 553,386

1 Claim. (Cl. 2—81)

This invention relates to ventilated clothing and more particularly to impermeable clothing having exhaust apparatus in combination thereto.

The use of impermeable clothing is essential to civilian defense personnel and to combatants engaged in chemical, bacteriological and radiological warfare, as well as to others.

Such clothing, for example, a suit, being rubberized becomes most uncomfortable to a wearer thereof due to the accumulation of body moisture therein.

It is an object of this invention to provide apparatus to remove the moisture from within an impermeable suit.

It is a further object to provide an exhaust apparatus adapted for attachment to an impermeable suit.

It is a further object of this invention to provide a battery operated exhaust apparatus of simple, rugged and light weight construction and design.

It is another object of this invention to provide an impermeable suit of clothing having a battery operated air exhausting apparatus secured thereto.

These and other objects of this invention will become apparent upon reading the descriptive disclosure herein taken in conjunction with the drawing in which:

Fig. 1 is a perspective view of an impermeable suit, broken away in part, and showing the manner of attaching the exhaust apparatus to the back of the suit and showing further an air filter disposed in the sleeve of the suit.

Fig. 2 is a transverse section of the exhaust apparatus showing the manner of securing an exhaust fan to the impermeable suit and showing further the manner of securing a miniature battery operated motor to the exhaust fan, the wiring of the electrical battery being omitted for purposes of simplicity,

Fig. 3 is a rear view of the motor and battery assembly with the casing thereof broken away in part to show the manner of wiring the battery to the motor,

Fig. 4 is a wiring diagram of the circuit employed, and

Fig. 5 is a cross-section of the exhaust fan showing the impeller blades therein.

Turning now to the drawing and particularly to Fig. 2 a miniature conventional exhaust fan **10** having a plurality of apertured fastening lugs **11** is secured to a centrally apertured rigid rectangular support plate **12** and to the back segment of the impermeable suit **13** by means of a plurality of rivets **14** disposed through apertures of the fastening lugs **11**.

Preferably a layer of adhesive material or a strip of apertured sealer sheet **15X** is disposed and secured between plate **12** and the pliable suit **13** thereby producing a hermetical seal therebetween.

The suit material may be rubberized cloth, plastic material or any equivalent pliable material impermeable to air and moisture. Also in lieu of rivets **14** other conventional means of attachments may be employed such as bolts with wing nuts, etc.

According to this invention a dry cell battery **15** of

suitable power is secured to the circular back wall **16** of the exhaust fan **10** through an intermediate insulator plate **17**.

A pair of suitable spring clips **18** are secured in spaced relationship to one another to insulator plate **17** by means of metal screws **19**, said clips being disposed in face-to-face relationship at a distance adapted to seizingly secure dry cell **15** therebetween.

A miniature motor **20** of suitable construction and adapted to be powered by dry cell **15** is provided with a rotor shaft **21**. The exhaust fan **10** is provided with a conventional rotatable impeller **22** having a conventional shaft **23** secured to the impeller end wall **24**. Impeller shaft **23** extends through end wall **16** through an aperture provided therefor.

As shown in Fig. 2 the impeller shaft **23** is secured removably to the rotor shaft **21** by means of a tubular coupling **25** and set screw **26**. Thus the rotor shaft **21** and the impeller shaft **23** are in linear axial relationship to one another.

The motor **20** is provided with a base plate **27**. A motor support plate **28** is secured by means of metal screws **29** to the bottom section of end wall **16** of exhaust fan **10**.

The motor base plate **27** is in turn secured to support plate **28** by means of metal screws **30**. Thus the motor **20** is rigidly secured to the exhaust fan **10** so that shaft **23** of the fan impeller can not be thrown out of alignment with motor shaft **21**.

As shown in Figs. 2 and 3 a conventional snap switch **31** is secured to the back motor plate by means of an L-shaped flange **32** and metal screws **33**. A protective cylindrical casing **34** of suitable cup-shaped construction and provided with a suitable aperture for switch **30** is disposed over the battery motor assembly and press fitted to the exterior of the circular exhaust fan housing.

As shown in the wiring diagram and Fig. 3 the positive end of the battery **15** is electrically connected through wire **35** to the switch **31** and the switch **31** is in turn electrically connected to motor **20** by wire **36**.

The other end of the battery **15** may be grounded to the metal framework of the fan **10** in any one of a number of ways, as by wire **37**, while the motor **20** may be grounded to the framework of the motor **20** by wire **38**.

The use of wires **37** and **38** may be entirely eliminated since the grounding of the battery **15** and motor **20** may be made directly to the metal structure of the fan-motor assembly since the fan and the motor are in metal to metal contact with each other.

In the operation of the exhaust fan of this invention atmospheric air is pulled into the impermeable suit **13** through air filters **39** disposed in each sleeve and in each pants leg. As shown in the drawing, the extremities of the appendages and the neck portion are provided with conventional elastic seizure means to provent entry of air at these places. Thus the only air sucked into the impermeable suit enters through the air filters located in the extremity of each appendage. These filters are of a suitable construction to filter out chemical vapors, germs and radioactive dust. The impeller **22** sucks the air from the filters about the body of the wearer and thence into fan **10** whence the moisture laden air is exhausted through exhaust fan port **40** out into the atmosphere.

The fan-motor assembly of this invention could be reversed so that the fan **10** is a blower fan in lieu of an exhaust fan. In this event a suitable filter is disposed over fan port **40**.

This invention has been described with reference to an illustrative embodiment but it is not to be limited to this illustration as it is an invention of broad scope.

I claim:

In combination a cover-all garment of clothing impermeable to gas comprising a body portion having a central aperture in the back wall and leg and arm appendages secured at their respective extremities in an air tight manner to the body of the wearer, each appendage having at least one air filter therein, an apertured support plate secured in an air tight manner to said garment about the central aperture in the back wall, a cylindrical fan housing having integral securing lugs at the front open end and having an apertured wall at the other end, said cylindrical fan housing being secured to said support plate at the front end by means of said lugs, an exhaust impeller disposed in said fan housing and having an impeller shaft protruding suitably through the aperture of said housing end wall, a battery operated electrical motor for actuating said impeller shaft disposed with the motor axle in line with said impeller shaft, coupling means securing said motor axle to said impeller shaft, support means for mounting said motor rigidly secured to said end wall of said housing, a suitable battery secured to said end wall of said housing, electrical conduit means electrically connecting said battery to said motor, and electrical switch means connected to said battery and said motor for actuating said motor.

References Cited in the file of this patent

UNITED STATES PATENTS

432,728	Eliel	July 22, 1890
1,423,190	Clements	July 18, 1922
2,084,173	Wexler	June 15, 1937
2,181,175	Cohen	Nov. 28, 1939
2,715,226	Weiner	Aug. 16, 1955
2,734,441	Williams	Feb. 14, 1956

FOREIGN PATENTS

681,687	France	May 17, 1930