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R. W. PEAKES

2,304,137

PROTECTIVE GLOVE

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FIG. 1

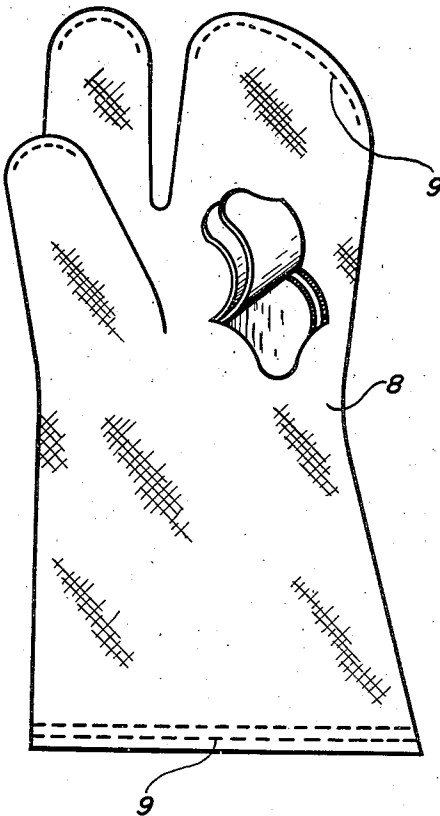


FIG. 2

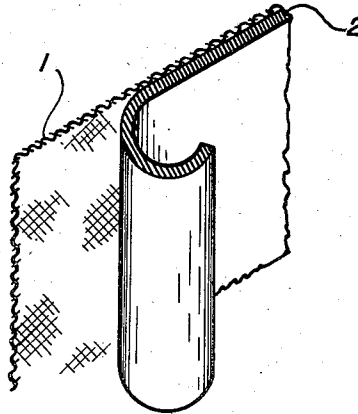


FIG. 3

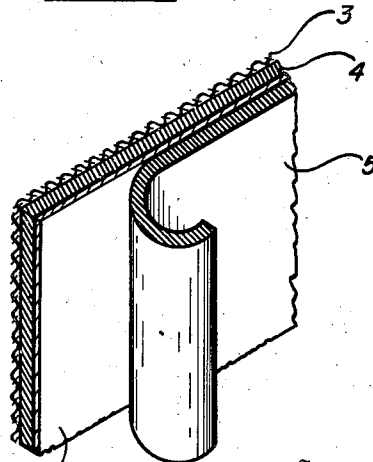
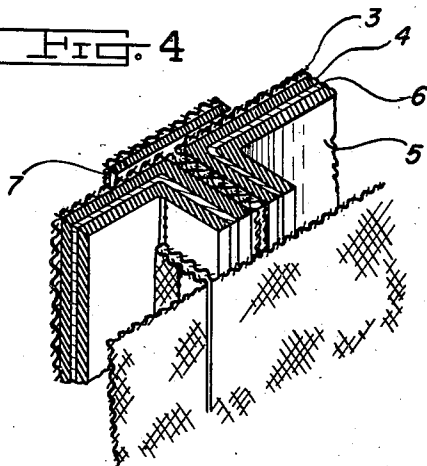


FIG. 4



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UNITED STATES PATENT OFFICE

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PROTECTIVE GLOVE

Ralph W. Peakes, Edgewood Arsenal, Md., assign-
or to Patrick J. Hurley, Secretary of War of the
United States of America, and his successors
in office

Application December 15, 1932, Serial No. 647,495

5 Claims. (Cl. 2-168)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manu-
factured and used by or for the Government for
governmental purposes, without the payment to
me of any royalty thereon.

This invention relates to the manufacture of
protective gloves which are specially treated to
protect the wearer thereof from the vesicant ef-
fect of various chemicals such as mustard gas.

It is well known that modern warfare involves
the use of various gases which have more or less
injurious effects upon the skin of those coming in
contact therewith.

Many protective devices have been developed
for the protection of persons exposed to these
gases, either at the battlefield or in the factory
producing the gases and filling the shells or
grenades therewith.

Heretofore no practicable gloves have been
available which afford complete protection to the
hands of the wearer and yet have sufficient flex-
ibility as not to materially interfere with the
normal use of the hands.

The principal object of this invention there-
fore, is to provide a protective glove which is im-
permeable to injurious gases.

Another object of this invention is to provide
a protective glove which is impermeable to in-
jurious gases and which is sufficiently flexible to
allow free use of the hand.

Another object of this invention is to provide
a glove which fully protects the wearer's hand
against vesicant gases while allowing free use
of the hand, and which is durable in use.

Another object of this invention is to provide
a glove formed of an inner liner which is im-
permeable to vesicant gases such as mustard
gas, and an outer waterproof glove capable of
withstanding the normal wear to which the glove
is subjected and protecting the inner lining from
mechanical injury and moisture.

A further object of this invention is to pro-
vide a glove formed of an inner liner and an outer
glove as above described and which is not cum-
bersome nor stiff in use.

A further object of this invention is to provide
a protective inner liner for gloves composed of a
relatively light fabric treated to render the same
impervious to vesicant gases. More specifically
it is an object of this invention to provide a
liner of this character treated with viscose latex,
Cellophane, viscose compounds or similar protec-
tive materials.

These and other objects of this invention will
be apparent from the following description and
appended claims, it being understood that the

several necessary substances and compounds and
the materials treated may be widely varied, the
following description being by way of example
only and without limiting the invention to the
specific embodiments set forth.

Figure 1 is an elevation of the glove and im-
permeable lining, with a portion of the fabric
and lining broken away.

Figure 2 is an enlarged section of the fabric
partially separated from the coating.

Figure 3 is a similar section of a modified form.

Figure 4 is a section showing a seam of the
lining, and the assembly with the outer glove.

One preferred embodiment of this invention is
as follows. A relatively light and flexible fabric
1 such as cotton fabric, balloon cloth, or the like,
is treated with a compound 2 to render it im-
permeable to mustard gas or similar gases. The
compound used for this purpose is a cellulose de-
rivative, such as viscose latex, Cellophane, or
other viscose compounds. Excellent results have
been obtained by the use of viscose-rubber latex
as a coating.

The coating mixture 2 may be applied to the
fabric in any approved manner. As one ex-
ample, 2-ounce cotton fabric 3 lightly coated
with rubber 4 on one side, to which a thin coat-
ing of viscose and rubber latex 5 plasticized with
glycerine is attached by a thin layer of glue 6
may be used. However, greater flexibility of the
glove may be obtained by directly coating the
fabric with viscose or viscose-rubber latex plasti-
cized with glycerine, without the initial light coat
of rubber and without the addition of glue. This
preferred embodiment gives ample protection
against vesicant gases and liquids and allows full
freedom of the hand.

The coated fabric is then cut to the shape of
a glove, and the seams carefully sewed. The
sewed seams of these inner gloves are next ren-
dered resistant to mustard gas or similar gases
by covering them with rubberized tape 7, as seen
in Figure 4. A preferred method, however, is to
coat the seams with rubber latex or cellulose
nitrate or cellulose acetate composition, prefer-
ably by spraying.

The inner glove made as described is then in-
serted into an outer wear-resistant glove of any
suitable type such as cotton fabric glove 8 coated
with a plasticized cellulose nitrate composition for
example, or a drying oil composition, or leather or
canvas glove. Preferably the coated side of the
liner is placed next to the inner side of the outer
glove. Prior to assembly of the inner and outer

gloves, however, both gloves are impregnated with glycerine to preserve flexibility.

The inner liner is then securely fastened within the outer glove by stitching 9 along the top of the glove and also around the opening for the hand.

Preferably the outer glove is waterproofed in any approved manner to prevent passage of moisture which might injure the impregnated liner.

Protective gloves made in accordance with the present invention afford protection against penetration by liquid mustard for fifteen hours. Furthermore, the durability of these gloves is such that they will outlast several pairs of cellulose nitrate-rape seed oil coated gloves previously in use, and are more flexible and comfortable.

Tests have demonstrated that gloves made in accordance with this invention wherein a vesicant chemical resistant inner liner is secured at spaced points within a wear and moisture resistant outer glove, afford excellent protection. This type of assembly results in a glove with a mustard gas resistance many times greater than the sum of the mustard resistance value of the constituent layers of the material, due to the main portion of the layers being unattached and slightly spaced from one another. The flexibility of this glove is also greater than that obtained by the same layers joined together throughout. The multiple layer construction allows the utilization of many materials which otherwise have proved to be valueless where flexibility, gas resistance, and durability are essential requirements.

It will be seen therefore that the present invention provides gloves which afford full protection against injurious gases for long periods of time, are extremely durable, and allow complete flexibility of the hand.

While I have described the preferred embodiment of my invention, I wish it to be understood that the invention is not limited to the precise ingredients and steps described herein by way of illustration, as it will be apparent that many changes in variations may be made without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A glove comprising an inner liner composed of fabric treated to render it impervious to vesicant gases, and an outer glove composed of wear-resisting material, said liner and outer glove being secured together to maintain their assembly but having their main surfaces unattached, said inner liner comprising a light cotton fabric having a coating of rubber, and a second coating of viscose-rubber latex.

2. A glove comprising an inner liner composed of fabric coated with a thin layer of viscose-rubber latex plasticized with glycerine to render the same impervious to vesicant gases, and an outer glove composed of wear-resisting liquid-proof material, said liner and outer glove being secured in assembled relation with their main surfaces unattached.

3. A glove for protection against chemical warfare agents such as mustard gas comprising an inner liner composed of light flexible fabric coated with one of the compounds consisting of viscose, or other cellulose derivative, and an outer glove of wear-resisting material, said liner and outer glove being attached only at widely spaced extremities thereof to thereby provide an air space between the main portions.

4. A glove for protection of the wearer against mustard gas and other vesicant chemical agents comprising an inner glove formed of light flexible cotton fabric having an impervious coating of viscose and rubber latex on the inner surface, and an outer glove of heavy waterproof wear-resistant material, said inner and outer gloves being assembled and secured together at widely spaced portions, whereby an air space is maintained between the inner and outer gloves to provide additional protection against vesicants.

5. A glove for protection against chemical warfare agents such as mustard gas comprising an inner liner formed of light flexible fabric treated with a mustard gas resistant material, and an outer glove of wear-resisting material, said liner and outer glove being attached only at widely spaced extremities thereof to thereby provide an air space between the main portions.

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