

July 15, 1958

P. FOTI
INSULATED GLOVE

2,842,771

Filed May 17, 1957

2 Sheets-Sheet 1

Fig. 1.

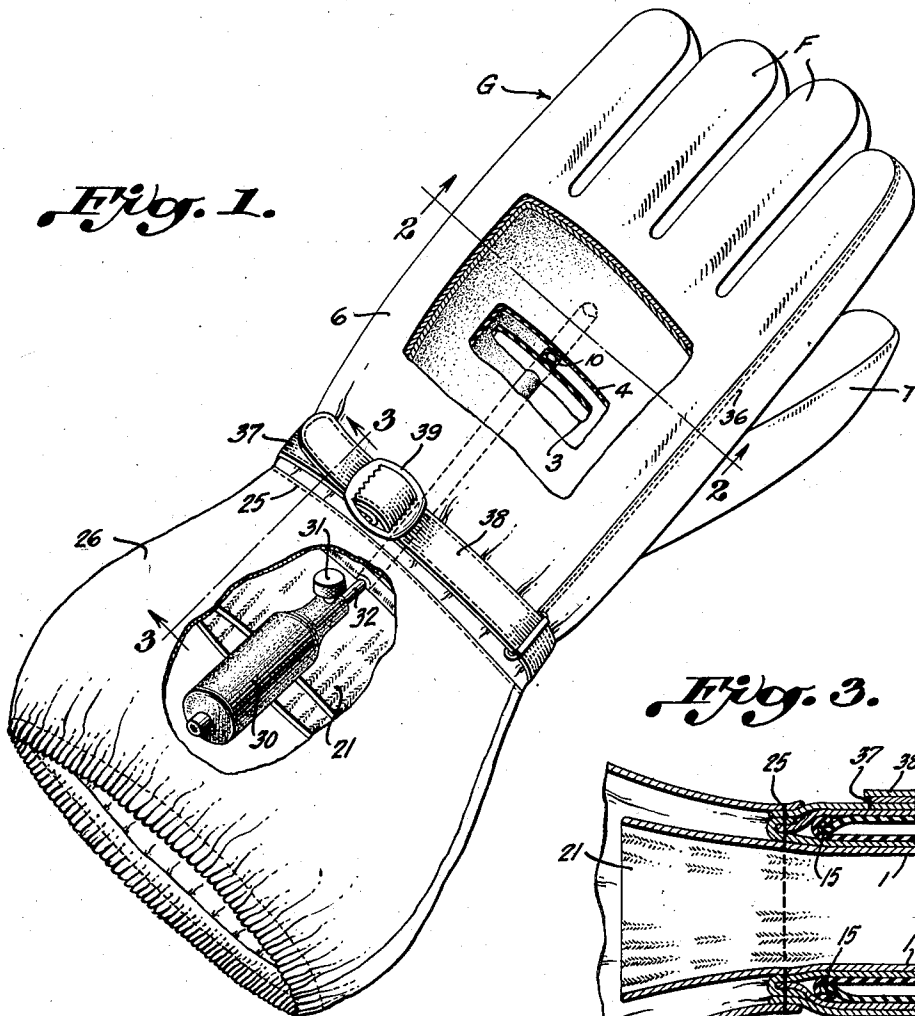


Fig. 3.

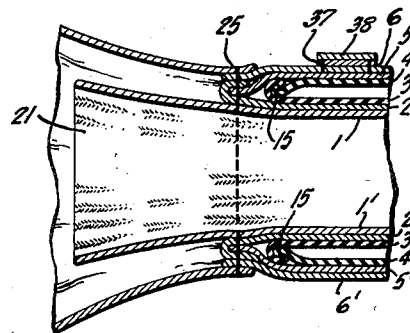
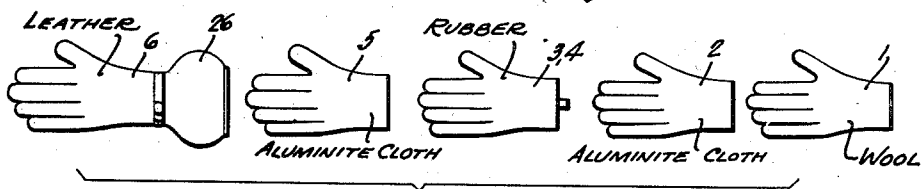


Fig. 4.

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Fig. 2.

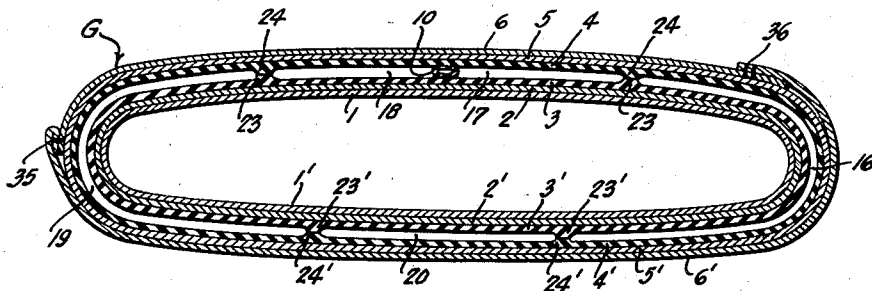


Fig. 5.

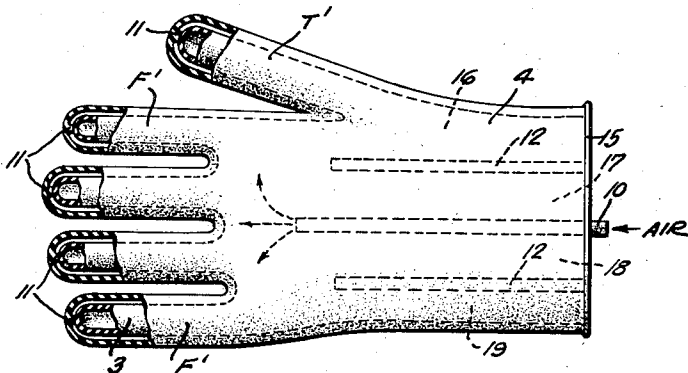
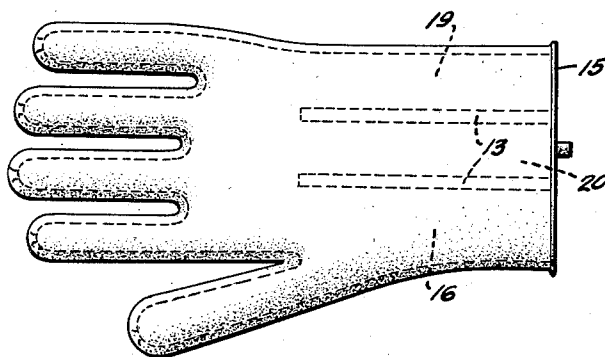


Fig. 6.



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INSULATED GLOVE

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8 Claims. (Cl. 2—159)

This invention relates to an insulated hand covering, and more particularly to an air-insulated hand glove.

It is an object of the present invention to provide a rugged glove construction which is comfortable on the hand and which is easily controllable to attain insulating effects with or without an air layer, as desired.

It is a further object of the invention to provide an insulated glove construction embodying a plurality of successively encased hand-gloves including a two-ply glove of gas-impermeable sheet material in the interior thereof, which is capable of being inflated with a layer of air of substantially uniform thickness without causing any undue bulging of the glove at any parts thereof so that manipulation of the hand with the glove thereon may be exercised with comfort and dexterity.

It is another object of the invention to provide an insulated glove construction having a self-contained concealed syringe bulb with a check valve in order to pump air into the glove and exhaust air therefrom to control the insulating function of the glove without need for any extraneous instrumentalities.

It is another object of the invention to provide a hand covering capable of conserving the warmth of the hand, to retain the heat generated by the body thereat, and to insulate the hand from the influence of external cold without need for chemical or electrical heaters, as are known in the prior art.

The invention proceeds upon the principle of providing a hand covering formed of multiple plies or layers including a two-ply layer of plastic sheeting such as plastic rubber, into which may be introduced air for the purpose of obtaining an effective layer of insulation between the hand and the ambient temperatures. This layer of air may be used in supplement to other heat insulating layers such as warm textile fabrics, such as those produced from wool or other natural and artificial yarns, or heat reflective sheeting such as textiles impregnated with aluminum paint and known as "Aluminite" cloth.

A gauntlet extension of the glove permits the concealing therein of a syringe bulb embodying a check valve for the purpose of pumping air into the two-ply glove of plastic sheeting for the purpose of developing the heat insulating layer. This unit, disposed on the back of the wrist, may also be controlled easily to exhaust air therefrom when the glove is to be used in a normal manner.

In order to eliminate any bulging of the glove when the internal two-ply glove is inflated, the latter is reinforced by means of longitudinally extending ribs disposed along the back and palm portions of the glove

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and in addition, the finger and thumb portions of the two plies of the glove are united at their tips so that the two-ply glove maintains its outline in conformity to the hand when the same is in an inflated state.

Other objects and purposes will appear from the following description of the invention described hereinafter, taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a perspective view of the glove in accordance with the present invention with portions thereof cut away to show the structure and assembly of some of its component parts;

Fig. 2 is a sectional view along line 2—2 of Fig. 1;

Fig. 3 is a sectional view along line 3—3 of Fig. 1;

Fig. 4 is a schematic exploded view of the component parts of the successively encased glove units forming the glove assembly in accordance with the invention;

Fig. 5 is a plan view of the back of the double-ply internal glove of plastic sheeting with the tips of the fingers and thumb portions broken away; and

Fig. 6 is a plan view of the palm face of the double-ply internal glove unit.

In the drawing is shown, a glove unit G which may be formed of multiple plies of different materials. While the invention may be applied in the construction of mittens, it is particularly useful in the fabrication of gloves having a thumb portion T and finger portions F for the accommodation of the thumb and fingers of a hand. It is understood that while the invention is illustrated in connection with a glove adapted for the left hand, the same construction is applicable to the companion glove for the right hand.

In the illustrated embodiment of the invention, the innermost layer of the glove at any cross-section thereof may be of a knitted fabric, and which may be a conventional wool glove having a back face 1, and a palm face 1' adapted to have the wearer's hand inserted through the mouth of the glove through the sleeve 21 extending over the wrist. As indicated in Fig. 4, the wool glove is encased within a layer of heat reflecting textile fabric which may be a textile impregnated with aluminum paint and known as "Aluminite" cloth. The gloves 1 and 2 are in turn successively encased within a two-ply rubber glove 3, 4 described in greater detail below and this assembly is surrounded by another glove sheath 5 of "Aluminite" cloth which is then insertable in an external jacket of leather 6 which may have a gauntlet 26 extending therefrom.

As shown in Fig. 3, the layers of material of wool 1, "Aluminite" cloth 2, two layers of plastic sheeting 3, 4, another layer of "Aluminite" cloth 5, and the leather layer 6 cover the back of the hand while the respective layers covering the palm portion of the hand are correspondingly designated as 1', 2', 3', 4', 5', and 6', respectively.

The internal two-ply glove of plastic sheeting is preferably formed of rubber and as shown in Figs. 5 and 6, the plies are joined at several points thereof. Thus, the two plies are joined at the points 11 of the finger portions F' and thumb T'. The two plies are also joined at the opposite end of the glove defining the mouth of the two-ply glove along the edge 13, the only opening in the seam 15 being one on the back of the glove through which passes the air tube 10, described in detail below, which passage is formed tightly around the

tube. These junctions may be made by heat sealing or by means of solvents. In addition to the junctions at the opposite ends of the two-ply glove, the glove is reinforced by the joining of juxtaposed ribs formed in the plies of the glove which face each other and which serve to reinforce these plies of the rubber glove. As shown in Fig. 2, the longitudinal ribs 23 formed outwardly on the rubber ply 3 are combined with ribs 24 facing inwardly of the ply 4 to develop junctions 12 (Fig. 5), along the back of the glove laterally of the longitudinal center thereof. Similarly, the ribs 23' facing outwardly on the ply 3' of the palm portion of the glove are joined to ribs 24' facing inwardly on the palm portion of the ply 4' to develop junction lines 13 on the palm face of the two-ply glove, as shown in Fig. 6, which likewise are laterally displaced relative to the longitudinal median of the glove. In addition, the above-mentioned air inlet tube 10 extends into the interior of the two-ply glove from the seam 15 between the plies 3 and 4 on the back of the glove and the surfaces of the tube contacting with the plies 3 and 4 are likewise joined thereto in a manner to reinforce and form compartments 17 and 18 on opposite sides thereof which are defined by the junctions 12 between the ribs 23, 24. The compartments 16, 19 and 20 are additionally formed between the ridges along the palm portion of the glove and along the lateral edges thereof.

As shown in Figs. 5 and 6, the tube 10 protrudes beyond the mouth of the double-ply glove and the same is adapted to be connected to the outlet nipple 32 of a bulb syringe 30 which may be controlled by means of a check valve 31 as is common in the case of syringes used in conjunction with sphygmomanometers and the like. The bulb 30 is adapted to rest above the wrist extension 21 of the innermost glove unit 1, and to be concealed by a surrounding gauntlet 26 which is stitched to the glove along the line of stitching 25. This line of stitching also serves to integrate the innermost layer of the glove 1, 1' with the outermost layer 6, 6' and including therebetween the layers of "Aluminite" cloth 2, 2' and 5, 5'. An opening of small extent is left in the stitching for the purpose of injecting therethrough the nipple 32 extending from the air supply, which in turn is connected to the end 10' of the air tube 10.

Of course, the seam 15 formed by vulcanization or heat sealing at the mouth of the double-ply rubber glove is free from the line of stitching 25 which serves to interconnect the other layers of the glove unit, as clearly illustrated in Fig. 3.

The glove may be fitted on its exterior with multiple straps 37 and 38, which may be fastened adjustably by buckle 39 in order to control the snugness of the fit of the glove on the hand of the wearer.

As shown in Fig. 2, the back of the glove 6 may be of leather and may be seamed along the longitudinal seams 35 and 36 to the palm portion of the glove 6' which may be formed of leather or any other different material.

In operation, the glove may be applied to the hand of the wearer which is maintained warm by means of the multiple layers of heat insulating material. If the heat retaining effect is sought to be augmented, the innermost double-ply glove of rubber sheeting may be inflated by a few successive compressions of the bulb 30, while the check valve is set to communicate with the air tube 10. The check valve will close automatically after a sufficient amount of air is injected into the double-ply glove, to obtain a predetermined air pressure suitable for each individual, and the user may work with the hand comfortably with the glove of enhanced insulating effect because the layer of air is of substantially uniform thickness since the bulging thereof is controlled by means of the longitudinally disposed reinforcing ribs and compartments of limited width formed by the junctions between the plies along the lines 12

on the back of the hand as well as the junction formed between the tube and the plies, the junction lines 13 along the palm portion of the glove, and by virtue of the interconnected tips 11 at the finger and thumb portions of the glove. When it is desired to deflate the glove, it is merely necessary to rotate the check valve 31 from the exterior of the gauntlet to release the air entrapped from the interior of the two-ply rubber glove, whereupon the glove may be used in its normal way once again.

While the innermost double-ply glove is preferably formed of a vinyl rubber, the same may be formed of any known natural or artificial rubber or other plastic sheeting which is gas-impermeable.

While a self-contained syringe pump is shown in the drawings, any other type of pump may be used to inflate the double-ply inner glove. The same may also be inflated by mouth, or a rupturable compressed air capsule may be used, if desired.

While I have described my invention as embodied in a specific form and as operating in a specific manner for purposes of illustration, it should be understood that I do not limit my invention thereto, since various modifications will suggest themselves to those skilled in the art without departing from the spirit of my invention, the scope of which is set forth in the annexed claims.

I claim:

1. A heat insulated hand-covering assembly comprising a plurality of successively encased hand-coverings of heat insulating material including an intermediate inflatable hand-covering of plastic sheeting consisting of two plies of gas-impermeable sheet material adapted to have air injected into the space between said plies to provide additional heat insulation and a plurality of longitudinally extending transversely spaced internal ribs joining said plies in the back and palm portions of said intermediate inflatable hand-covering to reinforce and provide air receiving compartments in said back and palm portions, whereby upon inflation of said intermediate hand-covering said ribs will serve to substantially retain the shape of said back and palm portions.

2. A heat insulated glove assembly comprising a plurality of successively encased gloves of heat insulating material including an intermediate inflatable glove of plastic sheeting consisting of two plies of gas-impermeable sheet material adapted to have air injected into the space between said plies to provide additional heat insulation, means connecting said plies at the tips of the thumb and fingers of said intermediate glove and a plurality of longitudinally extending transversely spaced internal ribs joining said plies in the back and palm portions of said intermediate glove to reinforce and provide air receiving compartments in said back and palm portions, whereby upon inflation of said intermediate glove said connecting means and said ribs will serve to substantially retain the shape of said back and palm portions and the finger and thumb tip portions of said intermediate glove.

3. A heat insulated glove assembly as defined in claim 2 in which an air supply tube is disposed between said plies on the back of said intermediate glove substantially along the longitudinal center line, said tube being secured substantially throughout the length thereof to said plies to provide additional reinforcement and additional air receiving compartments.

4. A heat insulated glove assembly as defined in claim 2 in which an air supply tube communicates with the space between said plies on the back of said intermediate glove, means for supplying air under pressure connected to said tube and a gauntlet on said glove assembly covering said air supply means.

5. A heat insulated glove assembly as set forth in claim 2 wherein said successively encased gloves include a knitted fabric glove on the interior and a leather glove on the exterior.

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6. A heat insulated glove assembly as set forth in claim 2 wherein said successively encased gloves include gloves of heat-reflective material adjacent to said intermediate inflatable glove.

7. A heat insulated glove assembly as set forth in claim 2 wherein said successively encased gloves include gloves of heat-reflective material adjacent to said intermediate inflatable glove, a knitted fabric glove on the interior and a leather glove on the exterior.

8. A heat insulated glove assembly as set forth in claim 4 wherein said air supply means comprises a compressible

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bulb having a check valve and nipple for connection to said air supply tube to control the supply of air in said intermediate glove.

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