

[54] **SURGICAL GLOVE**

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[52] **U.S. Cl.** **2/168**

[51] **Int. Cl.** **A41d 19/00**

[58] **Field of Search** 2/167, 168; 161/160, 161

[56] **References Cited**

UNITED STATES PATENTS

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2,974,373	3/1961	Streed et al.	161/160 X
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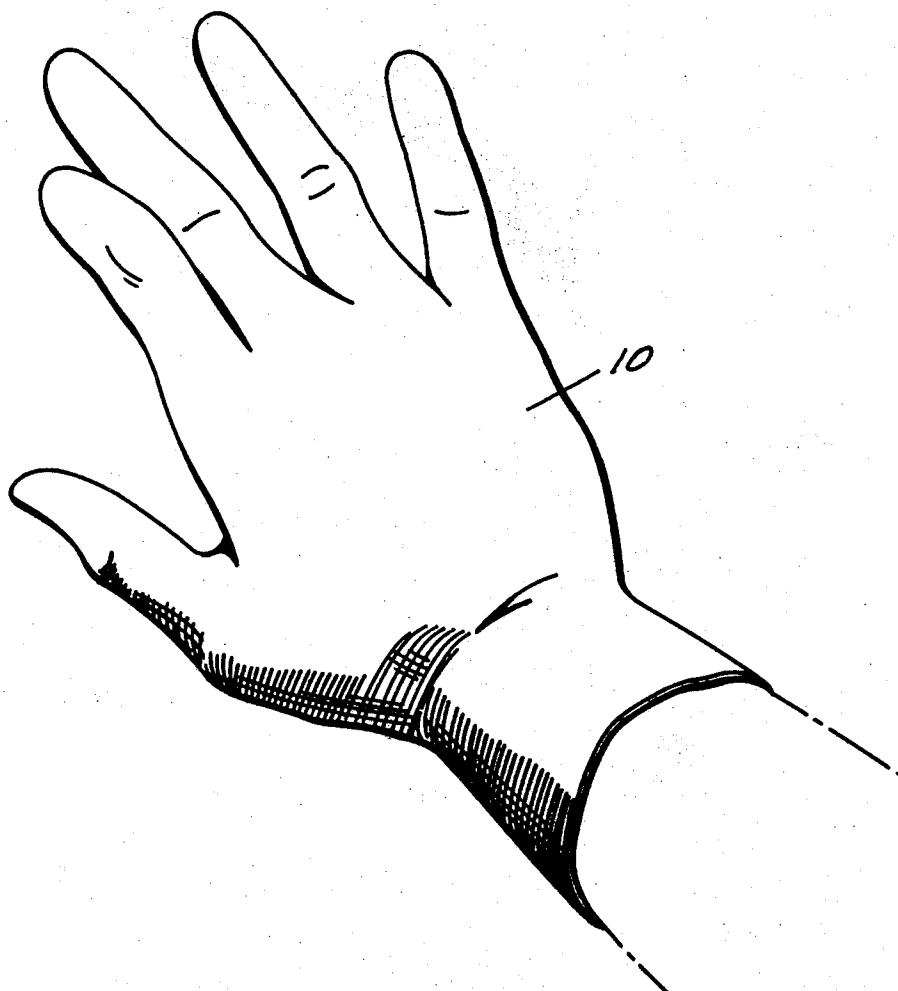
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Primary Examiner—Geo. V. Larkin

[57] **ABSTRACT**

A rubber or latex glove of the type used by surgeons which is laminated with an internal plastic lining of hydrophilic material. The hydrophilic lining reduces the friction between the glove and the hand of the user as the glove is applied or removed, and eliminates the necessity of conventional lubricating powders such as talc which may contaminate the surgical procedures. The lamina may be formed of the type of plastic known as hydro gels.

8 Claims, 2 Drawing Figures



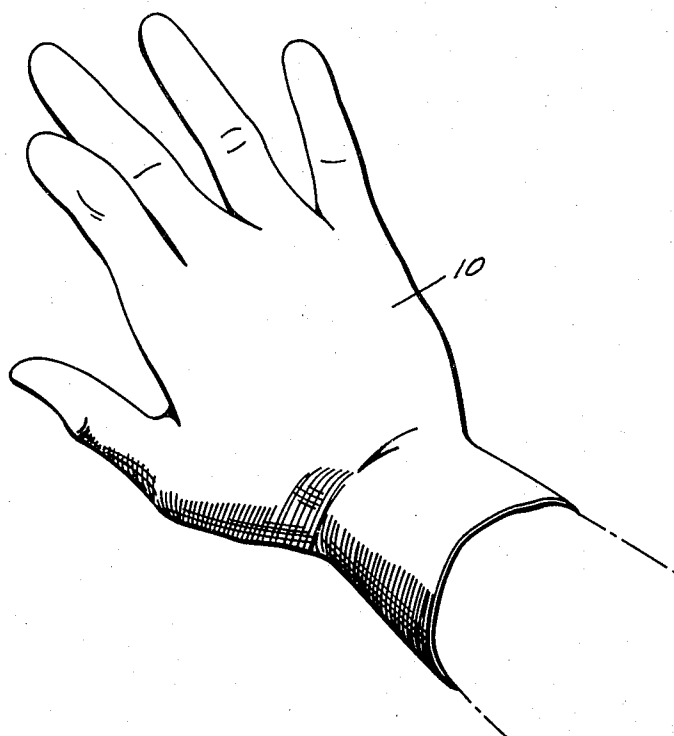


FIG. 1

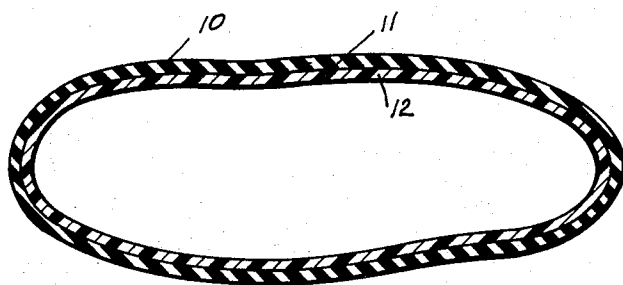


FIG. 2

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SURGICAL GLOVE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a laminated latex or rubber glove of the type employed by surgeons, and particularly to a glove which is formed with a lamina on its internal surface of hydrophilic and lubricating properties.

2. Description of the Prior Art

Conventionally surgeons have employed lubricants such as talc or other materials to reduce the friction between their hands and the inner surfaces of the flexible gloves which are applied over the hands. Such lubricants may serve to contaminate the surgical field. Laminated surgical gloves have been described where the lamina on the internal surface of the glove is a teflon compound. Such laminae have been hydrophobic in nature and do not materially reduce the friction between the lamina and the skin when the glove is applied or removed. Hydrophilic hydro gel polymer material is well known in the art and examples are disclosed in U. S. Pat. Nos. 2,976,576, 3,220,960 and 3,488,111. Articles made of such material include contact lens and diaphragms. Hydro gel material exhibits a capacity to absorb large quantities of water and other solvents, without decomposing.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a flexible glove for surgical and other use which may be readily applied to or removed from the hands of the wearer with a minimum of friction between the glove and the skin of the hands of the wearer. It is a further object of the invention to provide a flexible glove, the outer material of which is fabricated of rubber, latex or other plastic material, the internal surface of which is fabricated of a hydrophilic material which absorbs excessive skin perspiration during the period in which the glove is worn. A further object of the invention is to fabricate a flexible glove for surgical and other use the internal surface of which is formed of a lamina that is bonded to the outer material of the glove, said lamina being of a type which may absorb water or other lubricating materials such as silicone plastic so as to reduce the friction between the internal surface of the glove and the skin of the hand of the wearer.

In this invention a flexible glove of rubber, latex or other plastic outer material is formed with an internal skin of hydro gel material that is bonded to the outer glove material. The internal skin is applied preferably as a casting resin of hydro gel material which polymerizes to fuse to the outer glove material. The hydro gel material is hydrophilic in nature and absorbs as much as 60 percent or more of its weight of water. This material also will absorb and retain a quantity of lubricating plastic such as silicone. Since the inner lamina is bonded to the outer lamina, it cannot be parted from the glove during the act of installing or removing the glove from the hand of the wearer and therefore the lamina material cannot act to contaminate the surrounding field.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views,

FIG. 1-2 illustrate a flexible glove 10 of the conventional size and shape employed by surgeons for tightly fitting about the fingers and the hand.

The glove is formed of an outer lamina 11 fabricated of conventional rubber, latex or plastic composition and an inner lamina 12 bonded to lamina 11, with lamina 12 being fabricated of a hydro gel material which is bonded by polymerization.

Lamina 12 is hydrophilic in nature and may be initially formed as a liquid casting resin which is coated on the inner surface of a conventional flexible glove, with the coating allowed to polymerize so as to bond to the internal surface of the glove and thus form a permanent lamina 12. Additional lubricity of lamina 12 may be obtained by coating lamina 12 with a silicone liquid which the hydro gel material of lamina 12 absorbs. Lubricity, particularly of lamina 12 to the skin of the hands of the wearer may be increased also by initially coating lamina 12, after it has set, with any water soluble material.

The hydrophilic nature of lamina 12 insures absorption of excessive perspiration from the hands of the wearer while the glove is being worn.

The outer lamina 11 of the glove may be initially formed by conventional techniques from a rubber or latex material, or may be fabricated from a thermosetting or thermoplastic material. After the initial fabrication of the outer lamina 11, the inner lamina 12 may be formed by coating the internal surface of the outer lamina 11 with a hydro gel plastic coating in liquid form and permitting the hydro gel plastic coating to polymerize and bond to the inner surface of the outer lamina 11.

Prior to sealing the glove in a sterile container, the inner lamina 11 may be exposed to an atmosphere of controlled humidity, or may be sprayed with a solution so as to cause absorption of water or other lubricating material by the hydro gel plastic which forms the inner lamina 12. In particular, a solution of silicone resins may be applied to the inner lamina for the purposes of increasing the lubricity of the inner lamina surface.

In use, the water absorption properties of the inner lamina 12 will also permit the inner lamina material to absorb perspiration from the hand of the wearer with consequent increase in comfort to the wearer.

Since obvious changes may be made in the specific embodiment of the invention described herein, such modifications being within the spirit and scope of the invention claimed, it is indicated that all matter contained herein is intended as illustrative and not as limiting in scope.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. A flexible glove for use by surgeons and others as a protective hand covering which may be readily slipped on or off the hand of the wearer as desired in which the glove material is formed of a laminate structure consisting of an outer layer of flexible material and an inner layer of hydrophilic plastic material, said inner and outer layers being bonded together.

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2. The combination as recited in claim 1 in which the outer layer of the glove material is formed of a rubber compound.

3. The combination as recited in claim 2 in which the inner layer of the glove material is formed of a hydro gel plastic.

4. The combination as recited in claim 1 in which the outer layer of the glove material is formed of a latex compound.

5. The combination as recited in claim 3 in which the inner layer of glove material is formed of a hydro gel plastic.

6. The combination as recited in claim 1 in which the outer layer of the glove material is formed of a thermosetting plastic and the inner layer of the glove material

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is formed of a hydro gel plastic material.

7. The combination as recited in claim 1 in which the outer layer of the glove material is formed of a thermoplastic material and the inner layer of the glove material is formed of a hydro gel plastic material.

8. A flexible waterproof glove suitable for use by surgeons or others as a protective hand covering which may be readily slipped on or off the hand of the wearer, as desired, in which the glove is formed of a laminate material consisting of an outer layer of waterproof flexible material and an inner layer of hydrophilic hydrogel plastic material, said inner layer being capable of absorption of perspiration from the enclosed skin of the hand of the wearer.

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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 3,813,695

DATED : June 4, 1974

INVENTOR(S) : David L. Podell, Jr., et al.

It is certified that error appears in the above—identified patent and that said Letters Patent is hereby corrected as shown below:

Claim 5 is hereby corrected to read as follows:

5. The combination as recited in claim 4 in which the inner layer of glove material is formed of a hydro gel plastic.

Signed and Sealed this

Fifteenth Day of April 1980

[SEAL]

Attest:

SIDNEY A. DIAMOND

Attesting Officer

Commissioner of Patents and Trademarks