

UNITED STATES PATENT OFFICE

ISADORE M. JACOBSON, OF CHICAGO, ILLINOIS, AND STARR TRUSCOTT, OF BIRMINGHAM, OHIO

FLEXIBLE IMPERMEABLE FABRIC

No Drawing.

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This invention relates to improvements in gas retaining fabrics particularly adapted for use on aircraft of the aerostat or airship type.

5 It is, however, to be understood that without material modification the fabric is applicable to various other uses and applications.

As is well known, goldbeater's skin as an impermeable film has long been used for this purpose but is open to certain objections. 10 The fabric hereinafter described is intended to overcome the disadvantages of preparation of goldbeater's skin. It has been found that films prepared by the evaporation of the solvent of cuprammonium cellulose are impermeable to the passage of the buoyant gases. Such material can be produced either in large sheets or spread directly upon cloth, rubberized fabric, or other proofed fabric, 15 in a manner similar to that in which rubber is applied. It is desirable to treat such materials chemically, preferably with dilute sulfuric acid, in order to remove the copper oxide deposited with the cellulose. Furthermore, it is also desirable to plasticize the resultant film by suitable plasticizing agents, e. g., glycerine, glucose, etc. 20

In practice we prefer to use the following procedure: A solution of cuprammonium cellulose, containing 45 gms. of cellulose per liter, is spread upon balloon cloth and permitted to dry. Additional coats are spread over thus until the weight desired is obtained. The entire fabric is then air dried. 25 This is followed by treatment with 2% sulfuric acid to dissolve the copper oxide and washed thoroughly to remove the copper sulfate and excess sulfuric acid. After the washing, the fabric is plasticized by immersion in a 15% solution of glycerine and then air dried. The resultant fabric is almost completely impermeable to the passage of the buoyant gases. 30

It will thus be seen that the present invention contemplates a simple and practical substitute for goldbeater's skin well adapted for the use intended and designed to accomplish, among others, the various objects set forth. 35

The invention herein described may be 40 manufactured and used by or for the Govern-

ment of the United States for governmental purposes without the payment to us of any royalty thereon or therefor.

What we claim is:—

1. The process of coating a fabric which comprises applying thereto a film of cuprammonium cellulose, insolubilizing by an acid coagulant, and immersing in a glycerine bath whereby the fabric is rendered flexible and impermeable to gases. 55

2. A flexible and gas impermeable fabric consisting of a base material, a chemically insolubilized cuprammonium cellulose film thereon, and a plasticizing agent for said film. 60

Signed at Washington, District of Columbia, this 13th day of November, 1925. 65

ISADORE M. JACOBSON
STARR TRUSCOTT.