Sept. 8, 1925. 1,552,808

A. F. SULZER

AIRSHIP CONSTRUCTION

Filed Dec. 7, 1921

FIG. 1.

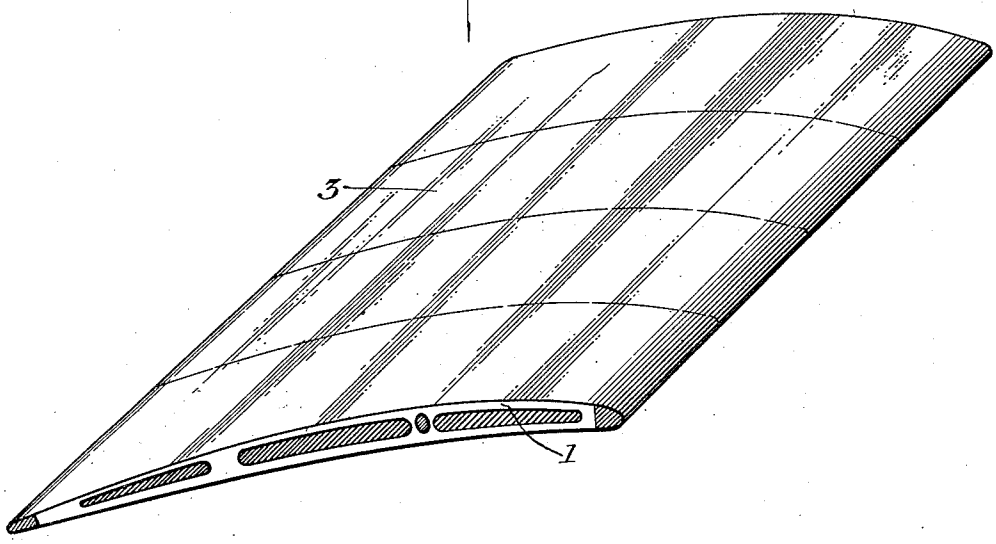


FIG. 2.

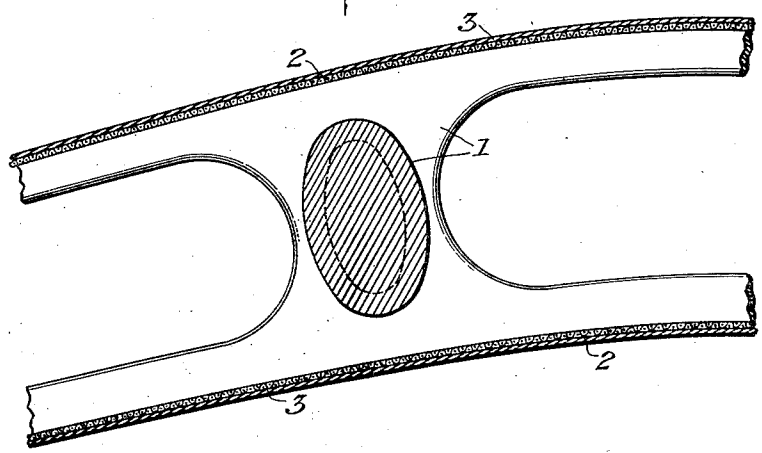
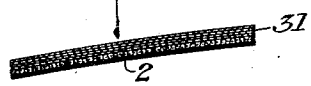


FIG. 3.



WITNESS

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Patented Sept. 8, 1925. 1,552,808

UNITED STATES PATENT OFFICE.

ALBERT F. SULZER, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

AIRSHIP CONSTRUCTION.

Application filed December 7, 1921. Serial No. 520,764.

To all whom it may concern:

Be it known that I, ALBERT F. SULZER, a citizen of the United States of America, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Airship Construction, of which the following is a full, clear, and exact specification.

This invention relates to airship construction. One object of the invention is to provide airship members which include a protective coating that will retain its flexibility and insolubility when exposed to moisture and the low temperatures which will prevail at high altitudes. Further objects will hereinafter appear.

In the accompanying drawing:

Fig. 1 is a perspective view of part of an aeroplane wing, certain parts being broken away;

Fig. 2 is a fragmentary sectional view of an aeroplane wing embodying my invention;

Fig. 3 is a fragmentary section of an aeroplane wing fabric coated in accordance with one form of my invention.

While my invention is of general applicability to all airship parts which it is desirable to protect by a flexible and insoluble coating, it is particularly beneficial when embodied in the wings of aeroplanes. For this reason, the following illustrative description will be chiefly devoted to that field. It is to be understood, however, that the underlying principle of my discovery may be applied to other parts of aeroplanes and even to parts of airships of the lighter-than-air species.

Aeroplane wings are usually constructed of a light framework over which is stretched a textile fabric. The latter is then coated with one or more layers of varnish or dope which tends to contract on drying and thus stretches the fabric tightly. At the same time the fabric is protected against moisture. The basis of these dopes has heretofore been chiefly cellulose acetate. I have found, however, that at very low temperatures which are not infrequently met with at high altitudes, or in winter months, the cellulose acetate tends to become brittle. I have discovered, however, that when cellulose ethers, such as water-insoluble ethyl celluloses, are used as the principal ingredients of the dopes or varnishes the coatings thereof remain flexible to an unexpected and very satisfactory degree when subjected to low temperatures.

In the accompanying drawing illustrating one embodiment of my invention, 1 indicates a hollow framework upon which is stretched the fabric 2 bearing the coating of cellulose ether 3. Instead of the single coating indicated in Fig. 2 there may be a plurality of coatings, as indicated at 31 in Fig. 3.

By way of example, I may dissolve 10 parts by weight of water-insoluble ethyl cellulose in 33 parts of denatured alcohol and 7 parts of benzol. Of course, any equivalent volatile solvent can be substituted. This is applied to the aeroplane wings in the same way that cellulose acetate dopes have been hitherto used. These being well known require no description here.

In addition to the ingredients given in the above example, I may add small amounts, say for example 1 or 2 parts, of high boiling substances or plasticizers like triphenyl phosphate, tricresyl phosphate, camphor, monochlorbenzol, etc. When several layers are employed, as indicated in Fig. 3, the coating next the fabric may be cellulose ether varnish having little or no high boilers or plasticizers. The upper layers may have much larger amounts of these substances.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

An aeroplane member comprising fabric mounted on a frame and protected and held taut by a shrunk coating containing water-insoluble ethyl cellulose of the type which is highly resistant to becoming brittle at low temperatures, said coating comprising a layer directly on the fabric containing substantially no plastifiers, and having thereon successive layers of cellulose ether containing substantial amounts of a plastifier.

Signed at Rochester, New York, this 29th day of Nov., 1921.

ALBERT F. SULZER.