H. L. HASKELL.

AEROPLANE BODY.

APPLICATION FILED APR. 9, 1918.

1,344,634.

Patented June 29, 1920.

4 SHEETS—SHEET 1.

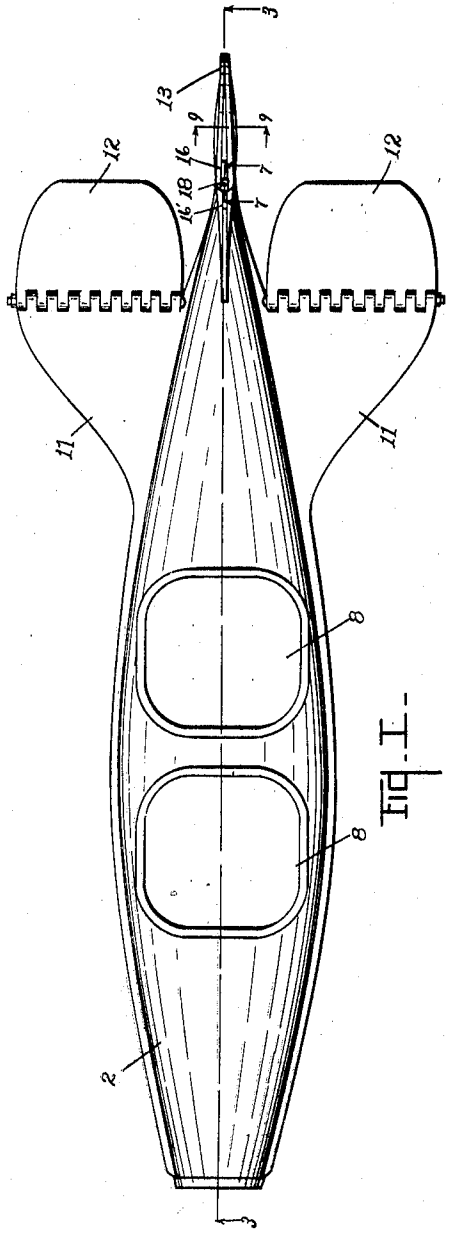

Fig. I.

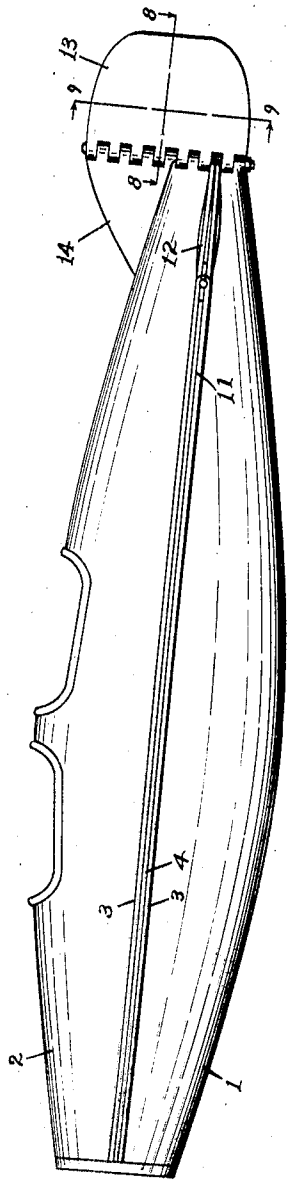

Fig. II.

Witness

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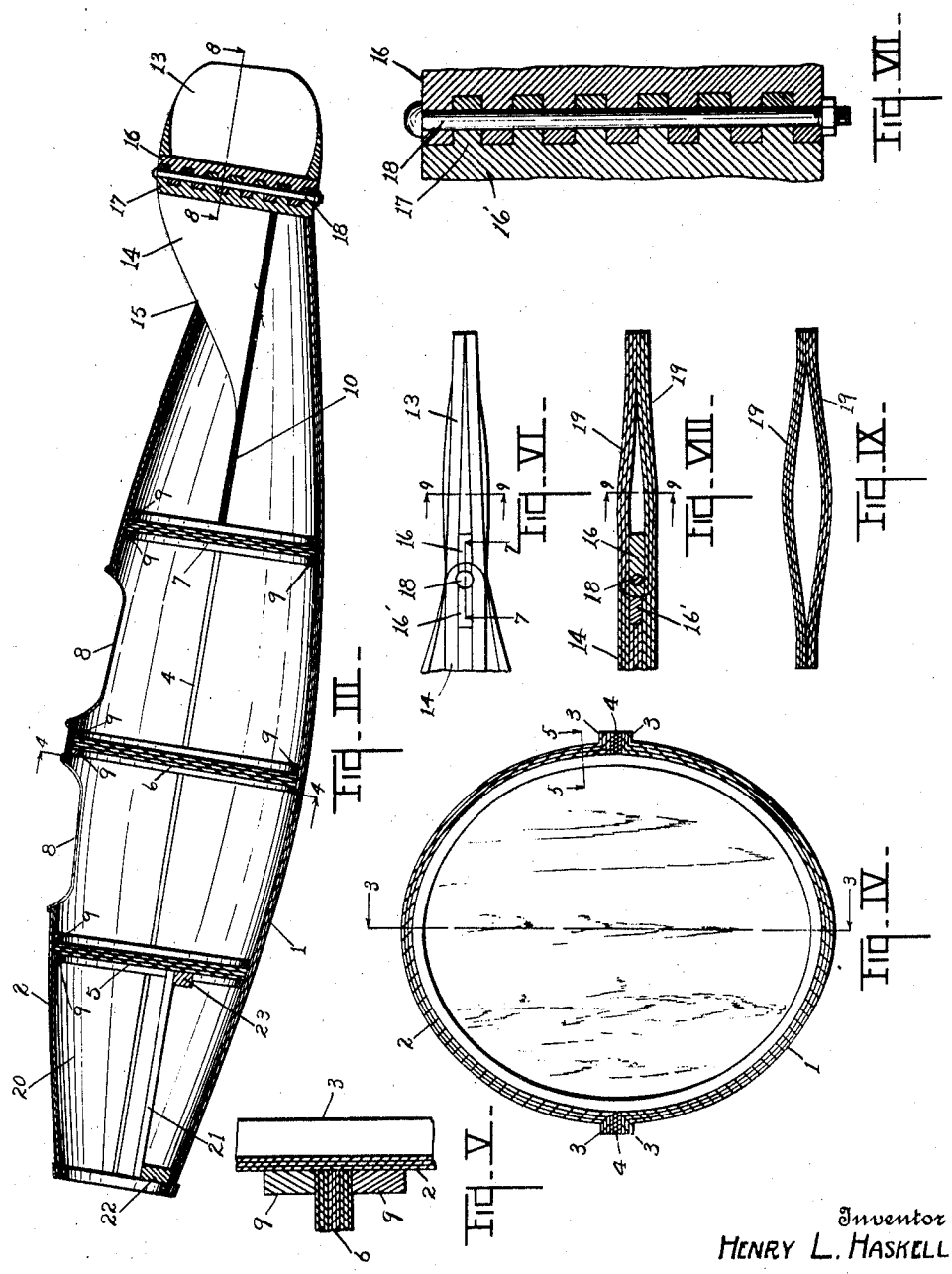

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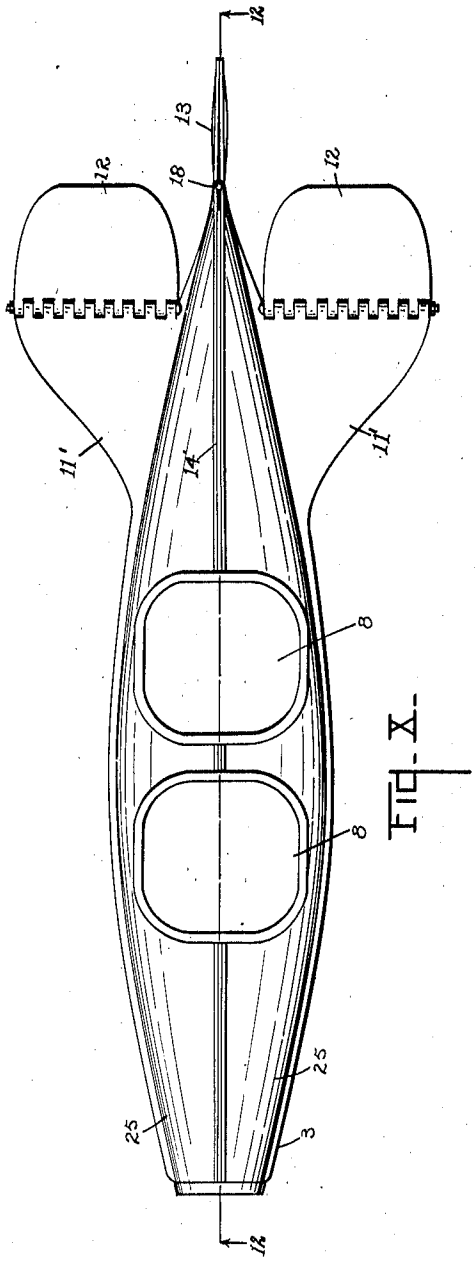

FIG. X.

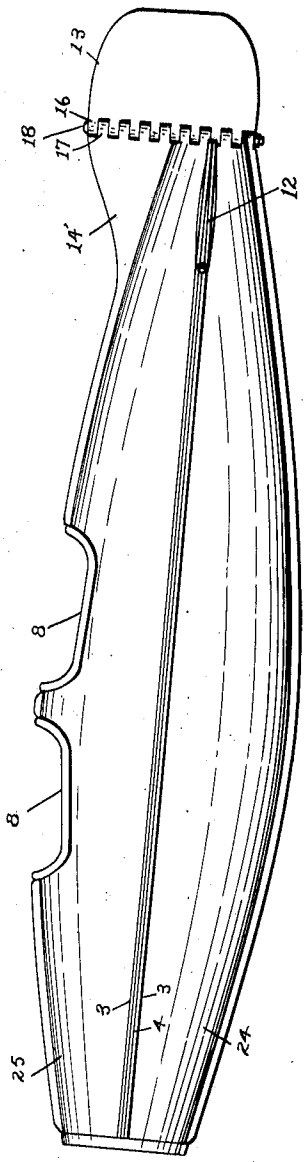

FIG. XI.

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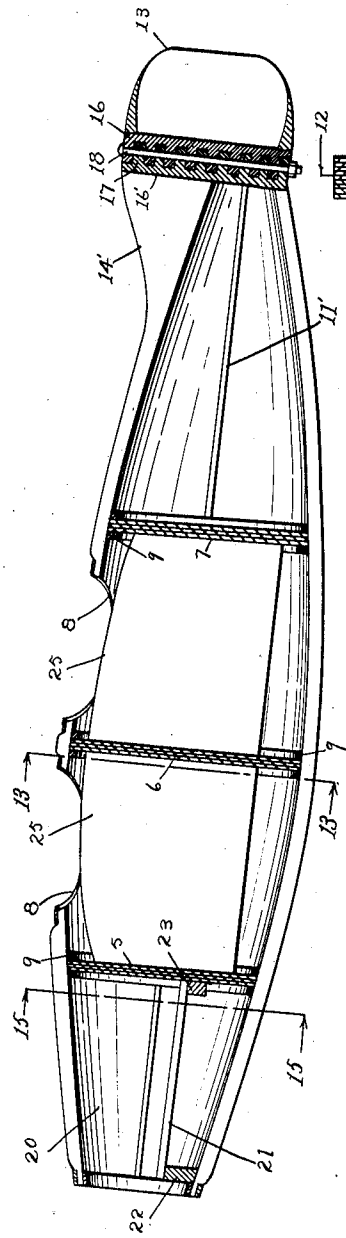

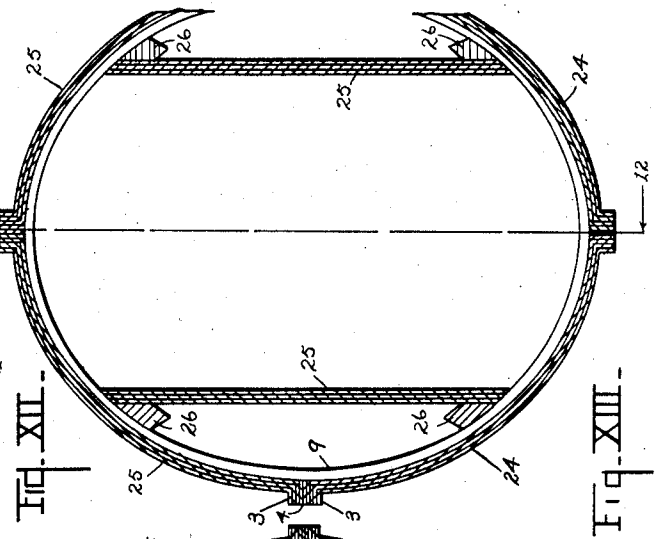

Fig. XII.

Fig. XIII.

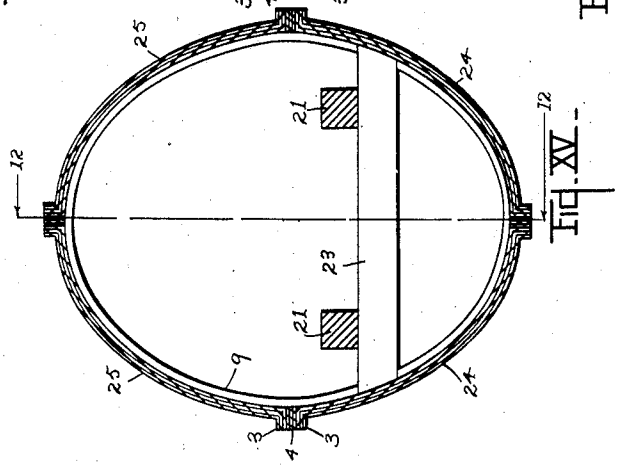

Fig. XV.

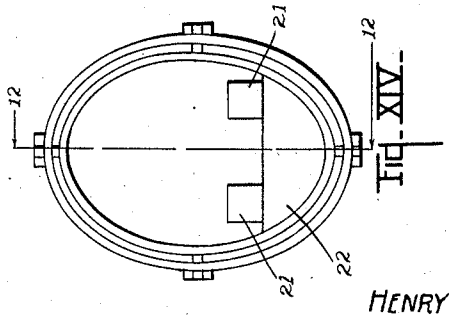

Fig. XIV.

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UNITED STATES PATENT OFFICE.

HENRY L. HASKELL, OF LUDINGTON, MICHIGAN, ASSIGNOR TO HASKELITE MANUFACTURING CORPORATION, OF CHICAGO, ILLINOIS.

AEROPLANE-BODY.

1,344,634. Specification of Letters Patent. Patented June 29, 1920.

Application filed April 9, 1918. Serial No. 227,469.

To all whom it may concern:

Be it known that I, HENRY L. HASKELL, a citizen of the United States, residing at Ludington, county of Mason, State of Michigan, have invented certain new and useful Improvements in Aeroplane-Bodies, of which the following is a specification.

This invention relates to improvements in aeroplane bodies.

The main objects of this invention are:

First, to provide an improved aeroplane body or fuselage which is light in weight and at the same time is strong and durable.

Second, to provide an improved aeroplane body or fuselage which is rigid and capable of withstanding very severe shocks or strains.

Third, to provide an improved aeroplane body or fuselage which is well adapted to withstand varying weather conditions.

Fourth, to provide an improved aeroplane body which may be very rapidly and economically manufactured.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a plan view of an aeroplane body or fuselage embodying the features of my invention.

Fig. II is a side view thereof.

Fig. III is a longitudinal section on a line corresponding to line 3—3 of Fig. I.

Fig. IV is a transverse section on a line corresponding to line 4—4 of Fig. III.

Fig. V is an enlarged detail section on a line corresponding to line 5—5 of Fig. IV.

Fig. VI is a detail plan view of the rear end of the body and vertical rudder.

Fig. VII is a detail vertical section on a line corresponding to line 7—7 of Figs. I and VI.

Fig. VIII is a detail horizontal section on a line corresponding to line 8—8 of Figs. I and III.

Fig. IX is a transverse section through the rudder on a line corresponding to line 9—9 of Figs. I, II, VI and VIII.

Fig. X is a plan view of a modified form of my invention in which the body is formed of four wall pieces or members instead of two as in Figs. I–V, inclusive.

Fig. XI is a side view of the embodiment shown in Fig. X.

Fig. XII is a detail longitudinal section on a line corresponding to line 12—12 of Figs. X and XIII.

Fig. XIII is a transverse section on a line corresponding to line 13—13 of Fig. XII.

Fig. XIV is a front elevation of the structure shown in Fig. XII.

Fig. XV is a transverse section on a line corresponding to line 15—15 of Fig. XII.

In the drawing similar reference characters refer to similar parts throughout the several views and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the body in the preferred embodiment of my invention is formed of a lower wall section or member 1 and an upper wall section or member 2 of multiple-ply veneer having out-turned or flanged edges 3 secured together with longitudinal members 4 between them. These wall members are molded or conformed into compound curves by an improved process which is the subject matter of another application to be filed by me, the veneer being formed of sheets of wood veneer united throughout by a water-proof glue or cement which is also the subject matter of another application filed by me. The edge flanges and the strips 4 are united throughout by this same water-proof glue which is of such a character that the layers of wood are so firmly united that in fracturing the grain of the wood will ordinarily separate before the glued surfaces. The body is of general cigar shape and is provided with cross partitions 5, 6 and 7 arranged in a spaced relation, pit openings 8 being formed in the top between the bulk heads. These partitions constitute reinforcing members and are also formed of multiple-ply veneer, annular fillets 9 being arranged at each side of the bulkheads or partitions and glued to the walls to assist in retaining them in position.

At the rear of the rear cross partition 7 the longitudinal members 4 are extended into a horizontal plate 10 extending entirely across the body and projecting at each

side to provide rudder members 11 on which the horizontal rudders 12 are pivoted.

The vertical rudder 13 is pivoted on the vertical rudder member 14 which is secured in the rear end of the body above the horizontal plate 10, the upper section of the body having a longitudinal slot 15 therein adapted to receive this member 14. The lower edge of the member 14 is secured to the plate 10.

The vertical rudder 13 has a hinge member 16 at its forward edge, while the rudder member 14 has a coacting hinge member 17. These hinge members have a plurality of interlapping knuckles secured together by the pintle 18. The horizontal rudders have the same type of hinge connection to the rudder plates 11.

The rudders are formed of two pieces of multiple-ply veneer 19, 19, lapped and glued together at their rear edge,—see Fig. VIII, their front edges being lapped upon and glued to the hinge member 16. The coacting hinge member 16′ is secured to the rudder member 14 which is formed of multiple-ply veneer by lapping the members thereof upon the hinge member and gluing thereto,—see Fig. VIII. The rudder sections are conformed into compound curves as shown in Figs. VI, VIII and IX, thereby increasing their strength and rigidity.

The inserted longitudinal members 4 and the cross plate 10, as stated, serve as reinforcing and bracing elements for the body. The cross partition plates also serve as effective reinforcing and bracing means and, owing to the shape of the body and the material from which its formed, provides a body which is very light in weight and one which at the same time is strong and durable and capable of sustaining very severe shocks and strains.

The portion of the body of the front partition 5 constitutes a compartment 20 adapted to receive the motor. Longitudinally disposed bed pieces 21 are supported therein by means of the cross piece 22 at the front of the body and the cross pieces 23 mounted on the front bulkhead.

In the modification shown in Figs. X–XV inclusive, the body is formed of four complementary sections or wall members, there being a pair of bottom members 24 and a pair of top members 25 having flanges 3 at their meeting edges secured upon the longitudinal strips 4 substantially as in the embodiment described, except that the strips 4 are not extended into a transverse plate, as 10.

The side and top strips are, however, extended to provide rudder members 11′ and 14⁴. In this construction longitudinal side plates 25′ are arranged in the pits to compensate for the weakening of the body caused by forming the openings 8 therein. These plates 25′ are also formed of multiple-ply veneer and are secured to the longitudinal cleats 26 secured to the walls of the body. The arrangement of the vertical and horizontal rudders in this structure is that of the structure described.

My improved aeroplane car or body is, as stated, very strong and durable being well adapted to withstand varying weather conditions and is rigid and capable of withstanding severe shocks and strains.

I have not attempted to illustrate any mounting means as such means form no part of my present invention. I have not attempted to illustrate or describe certain modifications in structure which might be necessary or desirable to adapt my improvements to various designs of aeroplanes, as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

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

1. An aeroplane body cigar-shaped in general form comprising upper and lower wall members formed of multiple-ply veneer and having integral edge flanges, said wall members being conformed in cross and longitudinal section so that one member complements the other, a horizontal cross plate of multiple-ply veneer disposed at the rear end of said body between said wall member flanges and extending outwardly providing horizontal rudder members, a vertical rudder member of multiple-ply veneer secured at its lower edge to said horizontal cross plate and projecting through an opening in the top wall member, and cross partitions of multiple-ply veneer fitting within and secured to the walls of the body, the upper part of the body having a pit opening between said partitions, said veneer plies and parts being united throughout by a water-proof glue.

2. An aeroplane body cigar-shaped in general form comprising upper and lower wall members formed of multiple-ply veneer and having integral edge flanges, said wall members being conformed in cross and longitudinal section so that one member complements the other, a horizontal cross plate of multiple-ply veneer disposed at the rear end of said body between said wall member flanges, the upper part of the body having a pit opening, said veneer plies and parts being united throughout by a water-proof glue.

3. An aeroplane body cigar-shaped in general form comprising upper and lower wall members formed of multiple-ply veneer and having integral edge flanges, said wall members being conformed in cross and longitudinal section so that one member com-

plements the other, a horizontal cross plate of multiple-ply veneer disposed at the rear end of said body between said wall member flanges and extending outwardly providing horizontal rudder members, longitudinal strips of multiple-ply veneer disposed between said edge flanges in front of said horizontal plate, a vertical rudder member of multiple-ply veneer secured at its lower edge to said horizontal cross plate and projecting through an opening in the top wall member, and cross partitions of multiple-ply veneer fitting within and secured to the walls of the body, the upper part of the body having a pit opening between said partitions, said veneer plies and parts being united throughout by a waterproof glue.

4. An aeroplane body comprising upper and lower sections formed of multiple-ply veneer conformed in cross and longitudinal section so that one section complements the other, a horizontal cross plate disposed between said sections at the rear end of said body and extending outward to provide horizontal rudder plates, and a vertical rudder plate secured at its lower edge to said horizontal cross plate and projecting through an opening in the top section.

5. An aeroplane body comprising upper and lower sections formed of multiple-ply veneer conformed in cross and longitudinal section so that one section complements the other, a horizontal cross plate disposed between said sections at the rear end of said body and extending outward to provide horizontal rudder plates.

6. An aeroplane body comprising complementary wall members formed of multiple-ply veneer and having integral edge flanges, a longitudinal member of multiple-ply veneer extending across the body and disposed between and to which the edge flanges of said wall members are secured, and cross partitions of multiple-ply veneer fitting within and secured to the walls of the body, the upper part of the body having a pit opening between said partitions.

7. An aeroplane body comprising complementary wall members formed of multiple-ply veneer and having edge flanges, members disposed longitudinally between and to which said flanges are united, said members being extended into cross bracing elements, and cross partitions of multiple-ply veneer fitting within and secured to the walls of the body, the top of the body having a pit opening between said partitions.

8. An aeroplane body cigar-shaped in general form comprising upper and lower wall members formed of mulptiple-ply veneer and having integral edge flanges, and a horizontal plate disposed between said edge flanges and extending across the body and outwardly beyond the walls of the body providing horizontal rudder members.

9. An aeroplane body comprising wall members formed of mupltiple-ply veneer having edge flanges, and a rudder member of multiple-ply veneer disposed between and to which said edge flanges are secured.

10. An aeroplane body comprising complementary wall members formed of multiple-ply veneer, and a rudder member disposed between and to which the edges of said wall members are secured.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

HENRY L. HASKELL. [L. S.]

Witnesses:
E. L. EDWARDS,
G. A. SWANSON.