

March 23, 1926.

1,578,073

G. CAPRONI ET AL
STRUCTURE AND COMPOSITION OF THE FUSELAGES AND
PARTS DEPENDING THEREON FOR AEROPLANES

Filed August 4, 1923

2 Sheets-Sheet 1

Fig. 1.

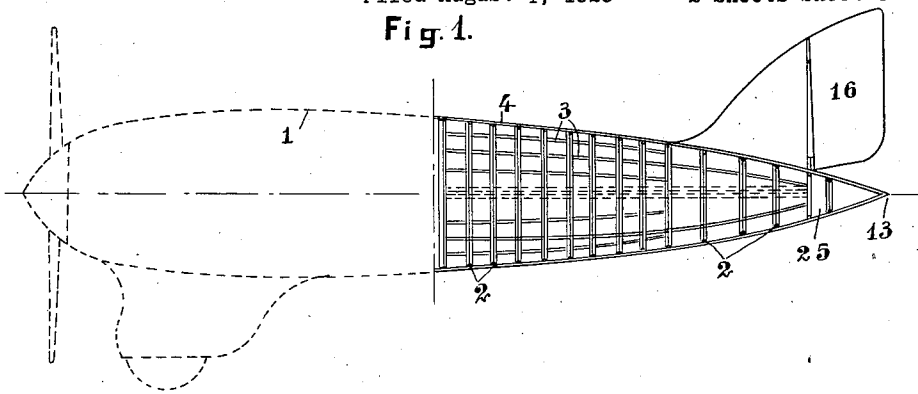


Fig. 2.

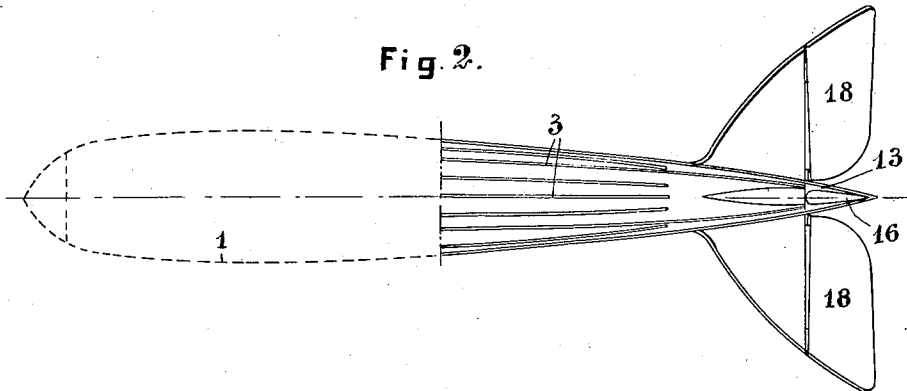


Fig. 3.

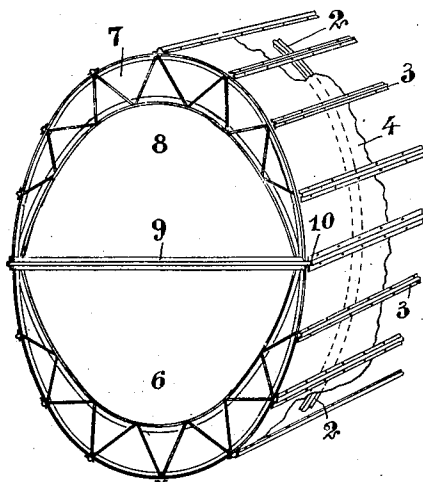
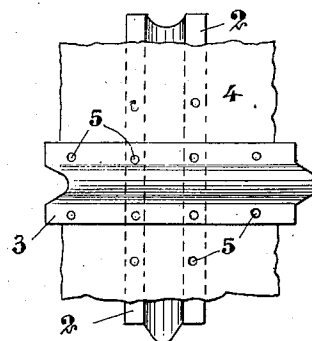


Fig. 4.



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Fig. 5.

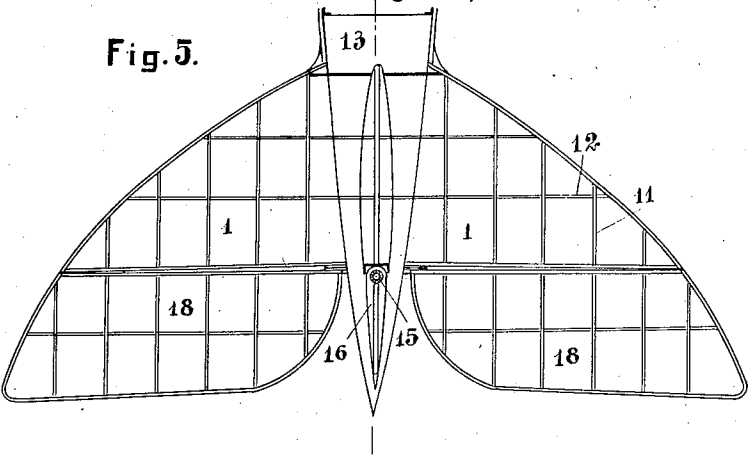


Fig. 6.

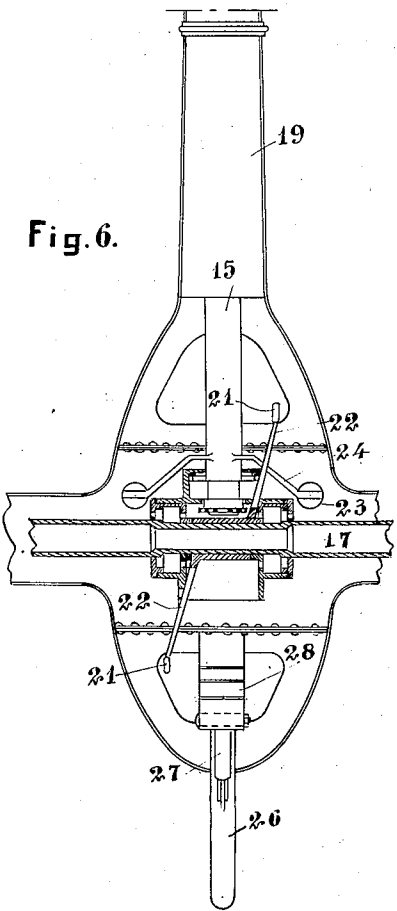


Fig. 7.

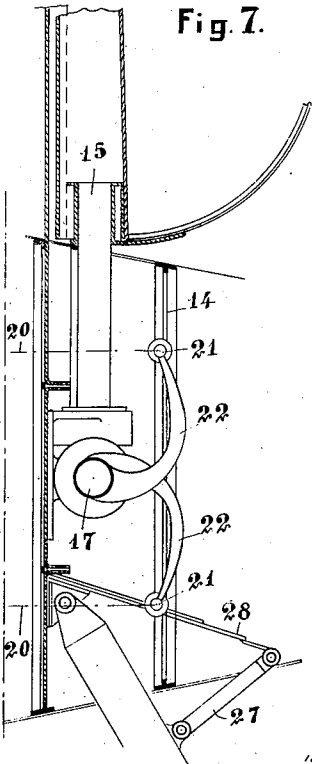
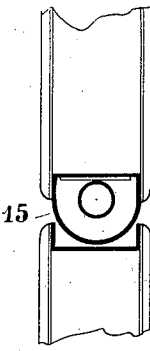


Fig. 8.



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UNITED STATES PATENT OFFICE.

GIANNI CAPRONI, UMBERTO NOBILE, AND RODOLFO VERDUZIO, OF ROME, ITALY.

STRUCTURE AND COMPOSITION OF THE FUSELAGES, AND PARTS DEPENDING THEREON FOR AEROPLANES.

Application filed August 4, 1923. Serial No. 655,762.

To all whom it may concern:

Be it known that we, GIANNI CAPRONI, a subject of the King of Italy, and resident of Rome, in the Kingdom of Italy, UMBERTO NOBILE, a subject of the King of Italy, and resident of Rome, in the Kingdom of Italy, and RODOLFO VERDUZIO, a subject of the King of Italy, and resident of Rome, in the Kingdom of Italy, have invented certain new and useful Improvements in the Structure and Composition of the Fuselages, and Parts Depending Thereon for Aeroplanes, of which the following is a specification.

The present invention relates to improvements in the structure and composition of the fuselage for aeroplanes and of the parts connected to same, said improvements comprising also a particular arrangement of the controlling members for the rudders and of the skid and having the object of conferring to the single parts a great resistance and such a shape as to secure a good penetration, facilitating at the same time their construction.

In the annexed drawing illustrating schematically a practical embodiment of the invention:

Fig. 1 shows in side elevation an aeroplane fuselage with the covering partially removed;

Fig. 2 is a top view of Fig. 1;

Fig. 3 is a perspective view of a section of the fuselage;

Fig. 4 shows a detail of the rigid covering;

Fig. 5 shows the arrangement of the wings of the aeroplane seen from the top;

Figs. 6, 7 and 8 refer to details of construction of the casing containing the controlling organs for the rudders.

As it appears from Figs. 1 and 2, the fuselage 1 consists of a series of rigid cross elements 2 having an annular shape and connected by longitudinal ribs 3, the whole of the framework thus formed bearing the covering 4 which may either be arranged between the rings 2 and the ribs 3, as it is shown in Figs. 3 and 4, or fastened outside the longitudinal ribs by means of riveted joints 5.

The longitudinal ribs 3 arranged in the sense of the stream lines as well as the rings are formed of section irons; the rings have the plain annular structure 2 or may be

formed of lattice work, as shown in 7, or of a diaphragm.

To facilitate the riveting of the covering on the aforesaid stiffening elements, the fuselage is divided into two portions 6 and 8 according to a longitudinal diametral plane, for instance by means of a longitudinal horizontal plane 9, as it is shown in Fig. 3. In this way is obtained that each of the two halves of the fuselage may be built up and finished independently from the other, said halves being afterwards strongly connected by means of external rivetings on the borders 10.

The aforesaid system of construction may be applied also to the supporting and steering surfaces of the aeroplane, and also said surfaces may be formed of a covering fastened to a double series of ribs, of which the external ones 11 are arranged in the direction of the motion, and the internal ones 12 in the transversal direction, as it is shown in Fig. 5 with particular reference to the horizontal rudder.

Another improvement in the construction of the fuselage consists in that its rear portion 13, having a conical or any other suitable shape, is connected to the front portion in a removable way so that it may easily be taken off.

The aforesaid structure permits of the finishing of the fuselage being carried out more easily and facilitates the assembling of the controlling organs of the movable surfaces and of the skid, which assembling may be performed after having removed the conical tail portion from the front part of the fuselage. Moreover, the possibility of taking off the said conical portion renders more easy both the inspection of the rear organs of the aeroplane and their eventual repairing.

The invention comprises also some improvements relating to the arrangement of the controlling organs of the rudders and to the arrangement of the skid.

As it appears from the Figs. 6, 7 and 8, the controlling organs of the rudders are arranged in a casing 14 crossed by the shaft 15 of the vertical rudder 16 and by the shaft 17 of the horizontal rudder 18, the extension 19 of said casing being fastened to the vertical rudder, as it is shown in Fig. 8.

The ropes 20 controlling the horizontal rudder are fastened to the ends 21 of the lever arms 22 connected to the shaft 17 of said rudder, and the ropes controlling the vertical rudder are fastened to the ends 23 of the lever arms 24 connected to the shaft 15 of the corresponding rudder.

The casing is applied to the rear portion 25 (Fig. 1) of the fuselage, from which projects the rigid element 26 forming the skid. This latter is linked in such a way as to be able to rotate in the longitudinal middle plane of symmetry of the apparatus; when rotating upward, it compresses either directly or by means of a link 27 a semi-elliptical spring 28, one end of which is connected to the link and the other end is rigidly fastened to the fuselage. With the aforesaid device is obtained the damping of

the shock of the skid against the ground 20 when the aeroplane is landing.

Claim—

Improved structure for aeroplanes, characterized in that the fuselage is formed of two halves symmetrical to a longitudinal 25 plane passing through its axis, the cross girders consisting of half rings executed in lattice work whereon are fastened the longitudinal ribs and the outer covering, the said two halves being joined together by means 30 of riveted joints upon having been built up separately.

In testimony whereof we have affixed our signatures this 14th day of July, 1923.

GIANNI CAPRONI.
UMBERTO NOBILE.
RODOLFO VERDUZIO.