

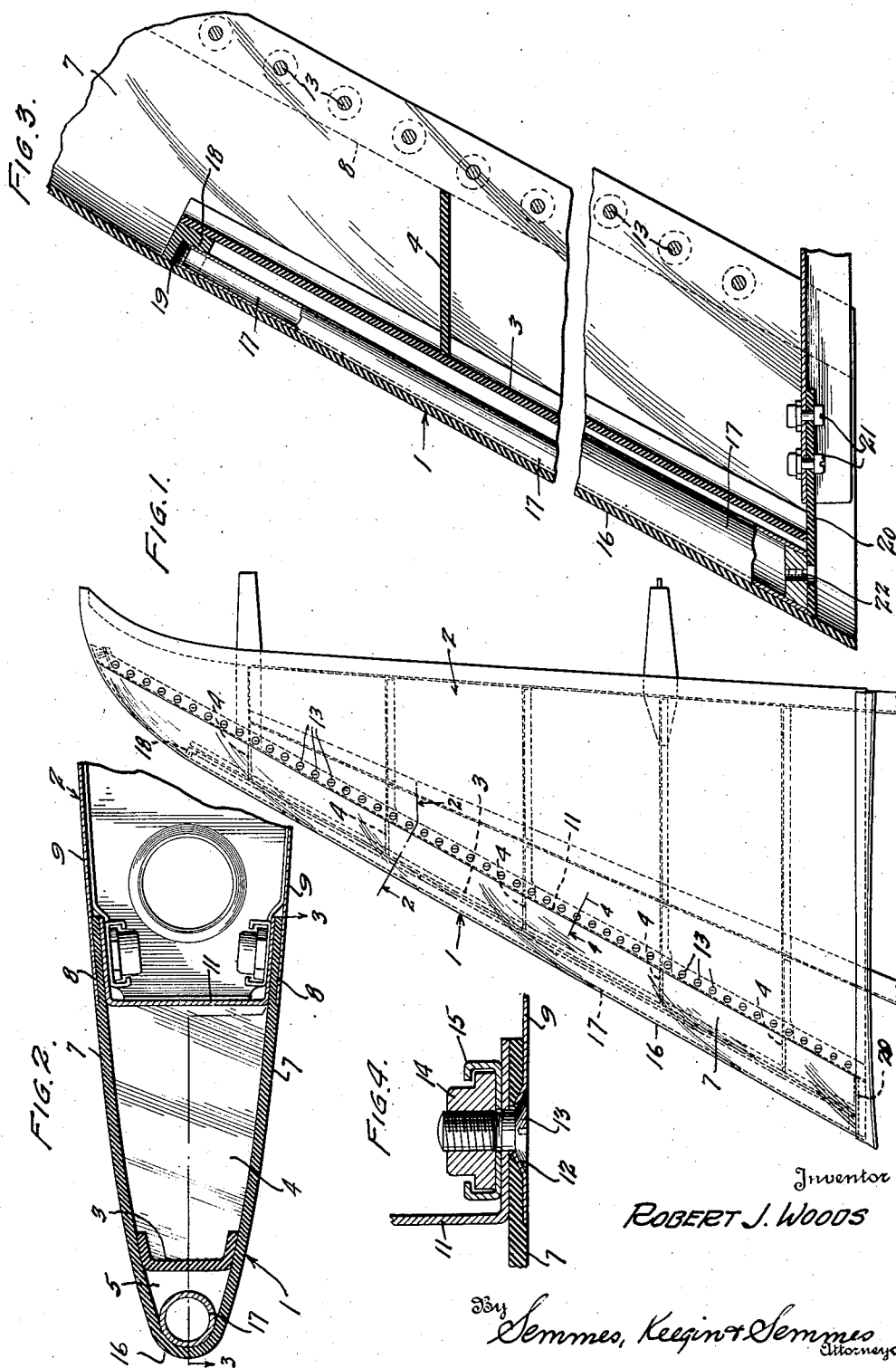
May 13, 1941.

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2,242,200

AIRPLANE STRUCTURE

Filed Dec. 1, 1938



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UNITED STATES PATENT OFFICE

2,242,200

AIRPLANE STRUCTURE

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Application December 1, 1938, Serial No. 243,477

6 Claims. (Cl. 244-117)

This invention relates to an assembly for aircraft provided with a compartment adapted to carry a radio antenna, and more especially to an assembly of this type which is provided with an insulated compartment for carrying radio antenna and which can be mounted on the exterior surface of an airplane without increasing the surface friction.

One of the objects of my invention is to provide an assembly provided with a compartment for carrying a radio antenna which is so constructed that it may be attached to any of the exterior surfaces of an airplane without increasing the surface friction.

Another object of my invention is to provide an assembly constructed of a plastic material having dielectric properties which is provided with a compartment which is constructed so as to form a completely enclosed container for a radio antenna, in which it cannot be affected by ice, moisture, dust or static disturbances.

A further object of my invention is to provide various modifications of this assembly constructed in such a manner as to especially adapt them to be mounted on various portions of the external surfaces of aircraft.

With these and other objects in view, my invention embraces the concept of providing an assembly made of plastic material which is provided with a section which is completely enclosed and entirely composed of dielectric material. This assembly is so constructed that it may be readily attached to any suitable portion of an airplane without materially increasing parasitic drag.

While this assembly may be used on any desired part of an airplane, including the leading and trailing edges of the main airfoil, I have for purposes of illustration shown a modification which is especially designed to form the leading edge of the vertical tail fin of an airplane.

In the drawing:

Figure 1 is a side elevational view of a vertical tail fin of an airplane disclosing my invention attached to the leading edge.

Figure 2 is a view taken along line 2-2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a view taken along line 3-3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a view taken along line 4-4 of Figure 1, looking in the direction of the arrows.

As shown in the drawing, my invention consists of an assembly, generally designated by the numeral 1, which is adapted, when in position, to form the leading edge of the vertical tail fin

2. This assembly 1 is formed of any suitable material having dielectric properties, such as acrylic plastic or other moldable material and consists, when viewed in cross section, of a parabolic shaped compartment equipped with a suitable strengthening longitudinal beam 3 and transverse bulkheads 4 which are also composed of plastic material and are attached to the compartment by cement or other suitable means.

The beam 3 partitions the interior of the assembly 1 to form a compartment 5. The rear edges of the outer surface 7 of the assembly 1 are rabbeted as shown at 8 to receive the skin 9, which forms both sides of the vertical tail fin 2, in such a manner as to make a flush surface.

Internally, the rear edges of the assembly 1 are supported by a metallic beam 11 which is a structural part of the vertical tail fin 2.

As best shown in Figures 1 and 4, the skin 9 on both sides of the vertical tail fin 2 is provided with a series of countersunk apertures 12 which coincide with apertures located in the rabbeted edges of the assembly 1 and the beam 11. Each of these apertures 12 is adapted to receive a screw-threaded bolt 13, the head of which lies flush with the skin 9. These bolts bind the skin 9 and the insulator 1 to the beam 11. These bolts engage nuts 14, a number of which may be mounted in a single channel strip 15.

When the insulating member 1 is mounted in the manner described, its forward edge 16 forms the leading edge of the vertical tail fin 2. Of course, it is apparent that the structure of the assembly 1 may be slightly varied so as to permit its use in a similar manner as a leading or trailing edge of any of the airfoils or control surfaces of the airplane or any adaptable portion of the fuselage.

The interior of the compartment 5 is entirely surrounded by plastic dielectric material and therefore is virtually insulated from external interference. A radio antenna of any desired type, such as the tapered, tubular mast shown at 17, is carried within this compartment. One extremity of this mast 17 is mounted in an insulating socket 18 which is provided with a flexible buffer 19. The opposite end of the compartment 5 is provided with a retaining plate 20 attached to a structural member of the fin as by bolts 21. This plate 20 engages the lower end of the mast 17 to hold it securely in place. Suitable means such as the threaded aperture 22 is provided for attachment of a lead in wire, not shown, for connecting the antenna with the radio transmitting and receiving apparatus.

By completely enclosing the antenna in this manner, all opportunity for it to be affected by ice, moisture, snow, rain or dust is avoided. Moreover, as the plastic material forming the enclosure has dielectric properties, interference due to static or electrical disturbances is greatly reduced. The construction of the assembly allows the device to be used as a leading edge for the tail fin, and therefore the use of this device does not increase the surface drag.

While for purposes of illustration I have shown one form of my invention, it is perfectly obvious that changes can be made to adapt the device for use on some other surface of the airplane, and that modifications can be made to adapt the construction of the insulated compartment so that other types of antenna may be used. For these reasons I wish it understood that I am only to be limited by the prior art and the scope of the appended claims.

I claim:

1. In an airplane having an airfoil surface, a parabolic-shaped assembly of plastic material having dielectric properties, the extremities of said assembly being rabbeted and attached to the outer surface of the airfoil in such a manner that the assembly forms one of the edges of the said airfoil, a plurality of transverse bulkheads attached to the assembly and extending into the airfoil, a beam extending longitudinally through the assembly and dividing it into two compartments, the assembly having an insulating socket in one end of one of the compartments, a flexible buffer within the socket, said assembly having an outlet aperture in the opposite end of the said compartment, said socket and buffer being adapted to support a radio antenna.

2. In an airplane having an airfoil surface, a housing of plastic material having dielectric properties, means to attach the housing to an edge of the airfoil surface in such a manner that the housing forms one of the edges of the said airfoil, the outer surface of the said housing being in a shape so as to fair into the airfoil surface, a compartment within said housing, a closure member closing one end of the compartment, said closure member having a recessed portion which forms an insulating socket, and a flexible buffer within the socket, said socket and buffer being adapted to support a radio antenna within the said compartment.

3. In an airplane having an airfoil surface, a parabolic-shaped housing of plastic material having dielectric properties, means to attach the housing to an edge of the airfoil surface in such a manner that the housing forms one of the edges of the said airfoil and fairs into the airfoil surface, a compartment formed within said housing of partition walls composed of material having dielectric properties, one of said walls com-

prising a closure member having a recessed portion which forms an insulating socket, and a flexible buffer within the socket, said socket and buffer being adapted to support a radio antenna within the said compartment.

4. In an airplane having an airfoil surface, a housing of plastic material having dielectric properties, means to attach the extremities of the housing to an edge of the airfoil surface in such a manner that the housing forms one of the edges of the said airfoil, the outer surface of the housing being shaped so as to fair into the airfoil surface, a beam extending longitudinally within the housing and dividing it into two compartments, a closure member closing one end of one of the compartments, said closure member having a recessed portion which forms a socket, said socket being adapted to support a radio antenna, and a closure member at the other end of the said compartment, said closure member being provided with an outlet aperture adapted to carry an antenna wire.

5. In an airplane having an airfoil surface, a housing of plastic material having dielectric properties, a plurality of transverse bulkheads attached to the assembly, means to attach these bulkheads to the airfoil in such a manner that the housing forms one of the edges of the said airfoil, the outer surface of said housing being shaped so as to fair into the airfoil surface, a beam extending longitudinally within the housing and dividing it into two sections which are closed at one end by one of the said transverse bulkheads, a closure member at the opposite end of one of the said sections, said closure member being provided with a recessed portion forming a socket, said socket being adapted to support a radio antenna.

6. In an airplane having an airfoil surface, a housing of plastic material having dielectric properties comprising a plurality of transverse bulkheads having rabbeted edges and a series of apertures, means cooperating with the said bulkheads to attach the housing to the airfoil surface in such a manner that the housing forms one of the edges of the said airfoil, the outer edge of the housing being shaped so as to fair into the airfoil surface, a beam extending longitudinally in the housing and cooperating with one of the bulkheads to divide the housing into two sections, a closure member forming one of the said sections into a compartment, said closure member being provided with a recessed portion which forms a socket, a flexible buffer within the socket, said socket and buffer being adapted to support a radio antenna, and an aperture in the transverse bulkhead at a point opposite the said socket whereby an antenna wire is enabled to enter the said compartment.

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