June 13, 1950 H. F. REMPT ET AL 2,511,513

AIRCRAFT ANTENNA

Filed Dec. 20, 1946

Fig. 1

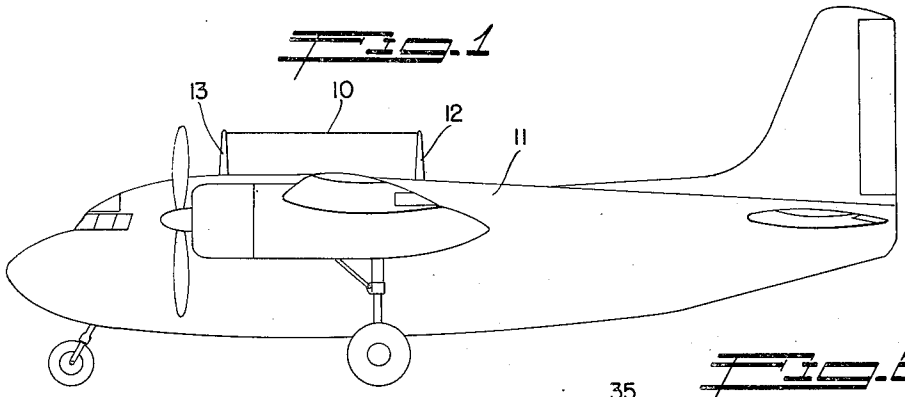


Fig. 2

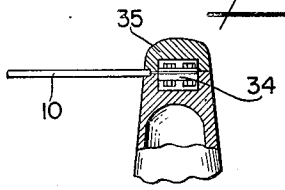
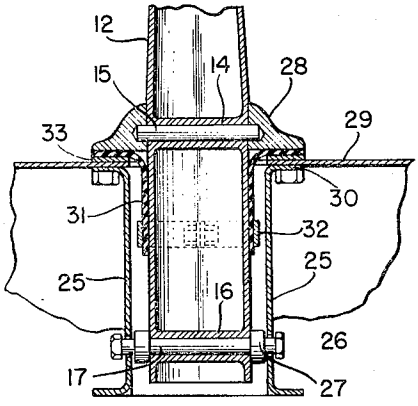


Fig. 3



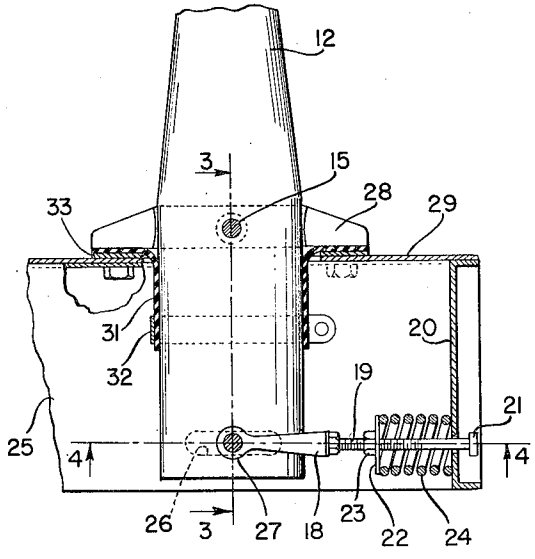
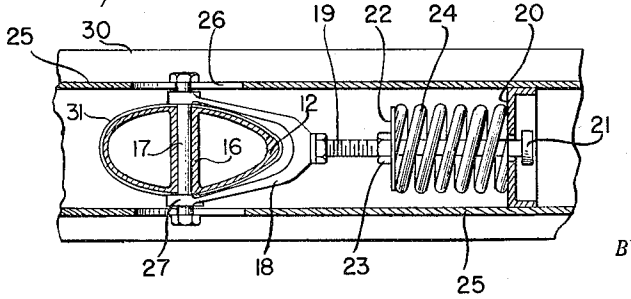


Fig. 4



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AIRCRAFT ANTENNA

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6 Claims. (Cl. 250—33)

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This invention relates to an improved antenna mast for supporting radio antenna from an airplane.

It has heretofore been the practice to utilize fixed masts for this purpose and to string the antenna wire between the mast tips using insulators and shock or spring links to maintain proper tension in the antenna wire. However, the use of such wire mountings or fittings requires breaks or splices in the wire, which with the insulators and shock links, are exposed to the air stream and produce undesirable corona points of electrical leakage or discharge.

It is an object of our invention to overcome the foregoing mentioned troubles by providing a pivoted spring loaded and insulated mast for adjustably tensioning the exposed antenna wire, thus eliminating splices, lead-in wires, and shock links exposed to the air stream. Our arrangement also facilitates the installation of plastic covered antenna wire, and permits the plastic cover to be carried inside the mast.

It is also an object of this invention to provide an antenna tensioning mast adjustable within the airplane, wherein the mast can be sealed at its point of entry to the airplane to prevent loss of cabin pressure while permitting movement of the mast to maintain the antenna tension.

It is a further object of this invention to provide a pivoted antenna mast for the purpose described wherein the mast is pivoted at a point close to the airplane skin line.

It is still another object of this invention to provide an improved and simplified antenna mast installation for aircraft wherein the mast can be readily installed or removed and adjusted to a predetermined antenna tension.

Other objects and features of the invention will be readily understood from the following detailed description of a typical preferred form of the invention wherein reference will be made to the accompanying drawings in which:

Figure 1 is a side view of an airplane showing the installation of an antenna and its supporting masts, embodying the features of this invention;

Figure 2 is an end side view of a mast installation embodying this invention with adjacent airplane structure broken away for clearness;

Figure 3 is a section on the line 3—3 of Figure 2; and,

Figure 4 is a bottom view of the mast installation, as taken on the line 4—4 of Figure 2.

The radio antenna 10 for an airplane 11 may run from a mast 12 to the vertical tail surface

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or between two masts, as the designer desires. We have shown the antenna as stretched between two masts, the rear mast 12 being that with which we are herein concerned, since one mast 13 may desirably be fixed because only one adjustable mast is necessary, and the lead-in wire from the antenna can most conveniently be brought into the airplane through the fixed forward mast 13, adjacent the radio instrument location in the airplane.

The two masts 12 and 13 may be substantially identical, being preferably molded from plastic impregnated fabric such as canvas, or the like. During the molding of the pivoted mast 12, a boss-like reinforcement 14 is provided for a pivot pin 15, and a second boss-like reinforcement 16 is provided near its lower end for a bolt 17 attaching a yoke 18 thereto. The yoke 18 is adjustably attached to a rod 19 passing through an abutment 20 and having a collar 21 on the far side, a washer 22 and nut 23 serving to adjustably compress a compression spring 24 against the abutment 20. With this arrangement, the collar 21 limits the clockwise movement of the mast and the collapsed height of the spring 24 limits movement in the reverse direction. A further safeguard is provided by extending the bolt 17 through side supporting members 25, elongated slots 26 therein limiting fore and aft motion and the yoke eyes 27 on either side of the mast preventing sidewise movement.

The pivot pin 15 has its ends set into a split outer fairing 28 bolted to the skin 29 of the airplane, the bolts also extending through flanges 30 on the members 25.

A rubber boot 31 is formed as a snug fit embracing the mast, and has its lower end sealed thereto by a clamping strap 32. The upper end of the boot is formed with a peripheral flange 33 clamped under the fairing 28, so that the clearance about the mast is sealed against loss of cabin pressure, or entrance of water, while the mast is permitted to pivot in a fore and aft direction.

In the use of the pivoted mast 12 of this invention, the end of the antenna wire 10 is clamped at 34, at the outer end of the mast, and a cover 35 applied thereover. The antenna wire extends to and is similarly clamped to the other or fixed mast 13, and is led down inside the mast 13 to the radio instruments. The adjustable or pivoted mast 12 is then set up to produce the desired tention in the wire 10 by screwing up the nut 23 to compress the spring 24. It will be understood that the length of the antenna wire will be so chosen that the range of spring adjustment and

mast movement will be capable of maintaining the wire tension over the extremes of temperature an airplane will normally encounter.

It will thus be seen that we have invented an improved antenna mast for airplanes and the like, wherein the tension of the antenna wire is adjustable and maintained in service, in spite of elongation and contraction of the wire, the mast being sealed against egress of air or ingress of misture, and therefore being especially adapted for use on pressurized cabin airplanes.

Having described only a typical form of the invention, we do not wish to be limited to the specific details herein set forth, but wish to reserve to ourselves any variations or modifications that may appear to those skilled in the art and/or fall within the scope of the following claims.

We claim as our invention:

1. A longitudinally pivoted antenna mast for mounting on a vehicle body comprising a streamlined shell the projecting outer end of which is adapted to receive an antenna wire, means pivotally supporting said shell transversely of the mast at an axis adjacent the surface of the body on which the antenna is mounted, said body having an aperture to receive a portion of the mast extending therethrough, means for spring loading the inwardly extending portion of the mast whereby to produce a pivoting moment thereon adapted to tension an antenna wire secured to the outer end thereof, and means for yieldingly sealing the mast to the body about the aperture therein through which said mast projects.

2. A longitudinally pivoted antenna mast for mounting on a vehicle body comprising a streamlined shell the projecting outer end of which is adapted to receive an antenna wire, means pivotally supporting said shell transversely of the mast at an axis adjacent the surface of the body on which the antenna is mounted, said body having an aperture to receive a portion of the mast extending therethrough, means for spring loading the inwardly extending portion of the mast whereby to produce a pivoting moment thereon adapted to tension an antenna wire secured to the outer end thereof, and means associated with said last mentioned means to limit the range of pivoting movement of said mast.

3. An antenna mast comprising a streamlined shell and mounting means for supporting said shell in longitudinally pivoting relationship to an aperture in an airplane skin, comprising a transverse pivot passing through said shell, a split fairing embracing said shell exteriorly of said airplane skin and having recesses to receive the ends of said pivot, means for yieldingly preloading said shell below said pivot in a direction to apply tension to an antenna rigged to the projecting end of said mast, and means for yieldingly sealing said mast to the airplane skin.

4. An antenna mast comprising a streamlined shell and mounting means for supporting said shell in longitudinally pivoting relationship to an aperture in an airplane skin, comprising a transverse pivot passing through said shell, a split fairing embracing said shell exteriorly of said airplane skin and having recesses to receive the ends of said pivot, means for yieldingly preloading said shell below said pivot in a direction to apply tension to an antenna rigged to the projecting end of said mast, and a yielding boot embracing said mast and clamped to the airplane skin by said split fairing to seal the aperture about said mast.

5. An antenna mast for airplanes and the like wherein the airplane skin is apertured to permit the mast to project therethrough, comprising a pivotal mounting for said mast providing a transverse axis for said mast closely adjacent the skin of said aircraft, and means adapted to yieldingly preload the inwardly projecting portion of said mast whereby to induce pivotal movement thereof in a direction to tension an antenna wire attached to the outboard end of said mast.

6. An antenna mast for airplanes and the like wherein the airplane skin is apertured to permit the mast to project therethrough, comprising a pivotal mounting for said mast providing a transverse axis for said mast closely adjacent the skin of said aircraft, means adapted to yieldingly load the inwardly projecting portion of said mast whereby to induce pivotal movement thereof in a direction to tension an antenna wire attached to the outboard end of said mast and means for sealing said mast in its aperture while permitting movement thereof in the airplane skin.

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