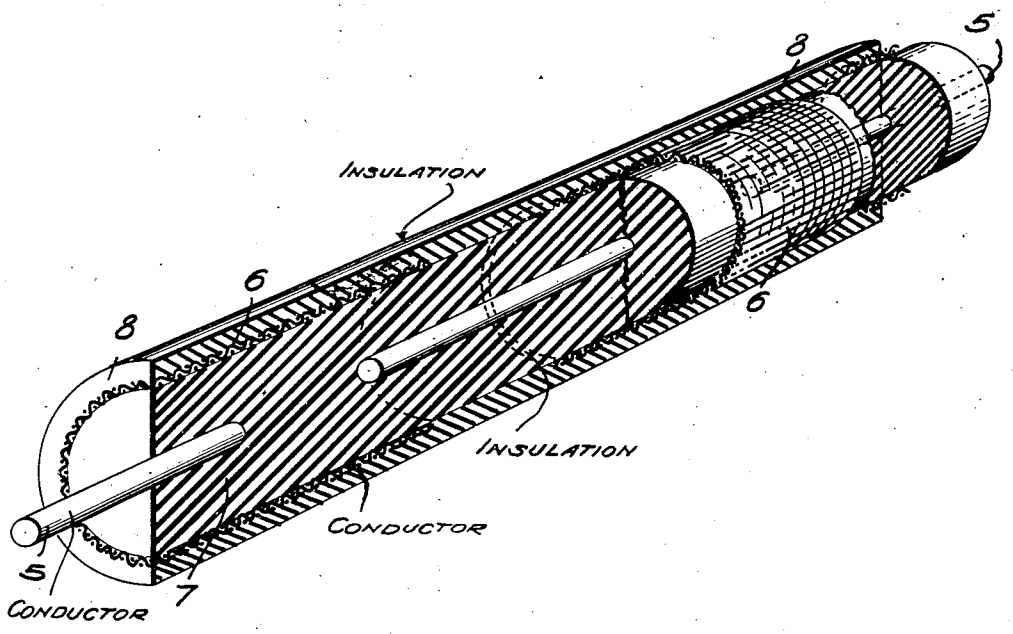
Feb. 25, 1947. W. H. BENNETT 2,416,280

ANTENNA

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ANTENNA

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6 Claims. (Cl. 250—33)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes; without the payment to me of any royalty thereon.

In modern aircraft, especially in metal airplanes, great difficulties are encountered in radio communication because of the accumulation of charges of static electricity on and the discharge thereof by reason of corona from the aircraft and, particularly the angular or pointed parts of it. Radio antennas and specifically, trailing antennas, are a frequent source of this trouble.

An object of this invention, therefor, is to provide a trailing antenna, useful in connection with aircraft, from which corona cannot occur.

More specifically, it is an object of this invention to so insulate an aircraft antenna that static electric charges cannot discharge from it in the form of a corona.

Other objects of my invention will be apparent as the description proceeds.

In the drawings, the single figure is a longitudinal, cross section.

That embodiment of my invention, selected from among others for illustration in the drawings and description in the specification, comprises a cable composed as follows. A number of short wires 5 of substantially equal length are spaced endwise from each other. Surrounding the ends of each wire 5 and each of the spaces between the wires is a short cylinder 6 made up of braided metal. The length of each of the wires and of each of the cylinders is the same. The length of the space between each wire 5 and the next and between each cylinder 6 and the next is the same. However, the wires and cylinders overlap in such a way that each cylinder encircles the ends of each adjacent pair of wires and the space between them. The body 7 of the cable is made of insulation having good electrical insulating properties at radio frequencies. There is provided a mechanically tough, electrically insulating covering 8 forming the outer surface of the cable. The wires 5 are shown embedded in body 7 and the cylinders 6 embedded in insulation covering 8, but this construction is optional and the body 7 may support both the wires 5 and the cylinders 6.

A suitable length of antenna for most purposes is twenty feet for a cable about five-sixteenths inch diameter, but these dimensions are neither critical nor universal. Longer wires 5 and cylinders 6 are needed for longer wave length radio communication than the usual broadcast band.

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Smaller diameter cable permits using shorter lengths of wires 5 and cylinders 6.

I do not intend to be limited save as the scope of the annexed claims may require.

I claim:

1. Means for eliminating or substantially reducing the escape of static electricity from a metal airplane along a trailing antenna, said means comprising, an elongated body which is substantially an insulator to electricity of radio frequencies, a covering of insulation encircling said body, a number of tubular metallic members and a number of rod-like metallic members supported by said body and said covering and spaced from each other longitudinally and radially of said body, said members overlapping in such a way that the ends of said rod-like elements are encircled by and are located within said tubular members.

2. The combination comprising, a wireless communications apparatus and an antenna therefor consisting of a center conducting core divided into separate lengths, and a conductor of tubular form surrounding said core but insulated therefrom and divided into a corresponding number of lengths, said core and said conductor being so arranged that each one overlaps the breaks or intervals in the continuity of the other.

3. An aircraft radio communications apparatus and a trailing antenna forming a part thereof, said antenna comprising, a cable having a center conducting core divided into a plurality of separate parts, a tubular conducting surface similarly divided and overlapping said center core but insulated therefrom and so disposed that the breaks or intervals in each conductor will be lapped by the substance of the other, and a protecting insulating covering surrounding said conductors.

4. The combination comprising an apparatus providing communication between spaced points without a connection between them and an antenna forming a part of said apparatus and comprising, a center conducting core divided into any required number of equal lengths, a tubular conducting envelope for the same divided into a corresponding number of lengths, both said core and said envelope being so arranged that the intervals or breaks of conductivity of each are at the middle of the overlapping length of the other, and a body of insulating material holding said core and said envelope in spaced relationship.

5. A wireless communications apparatus having in combination therewith an antenna composed of two parallel conducting surfaces insu-

lated one from the other and equally divided into any required number of lengths but so arranged that the breaks or intervals of continuity of one shall be at the middle of the length of the other, insulating material placed between the two parallel conductors, and an insulating surface surrounding the whole.

6. A radio apparatus suitable for mounting in an aircraft in combination with a trailing antenna electrically connected thereto and comprising a plurality of short conducting wires arranged in spaced relationship along the axis of the antenna, a plurality of short electrical conductors arranged in spaced relationship along the antenna and overlying the ends of said wires, and material having good insulating characteristics at radio frequencies arranged between said wires

and said conductors and forming a support for them in their relatively spaced positions.

WILLARD H. BENNETT.

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