June 11, 1940. W. C. DE ROO ET AL 2,203,945

RADIO ANTENNA

Filed Oct. 20, 1937

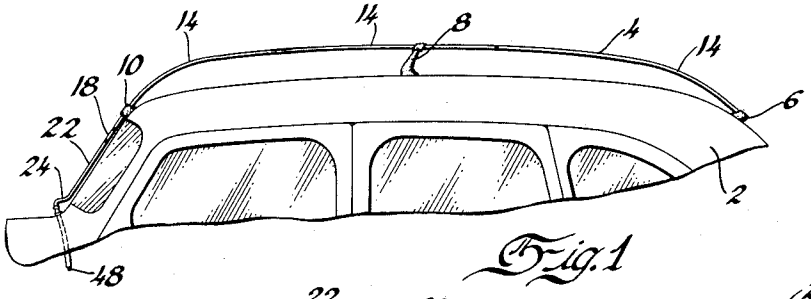


Fig. 1

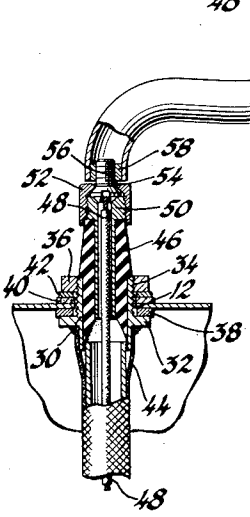


Fig. 2

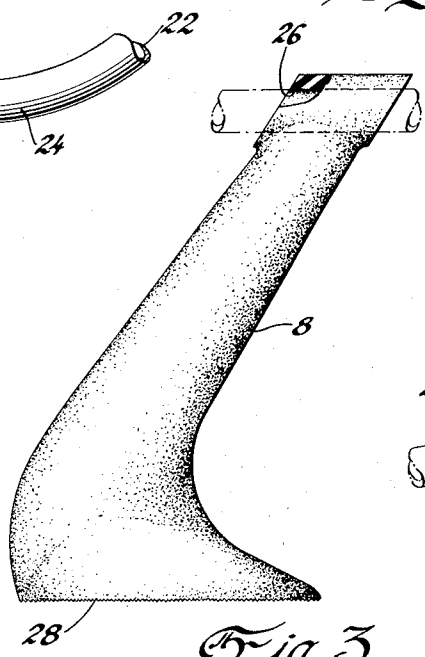


Fig. 3

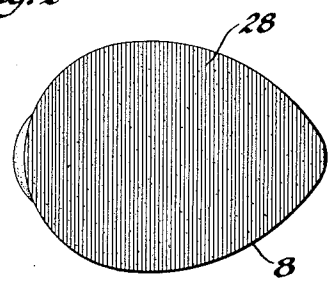


Fig. 4

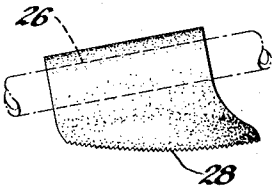


Fig. 5

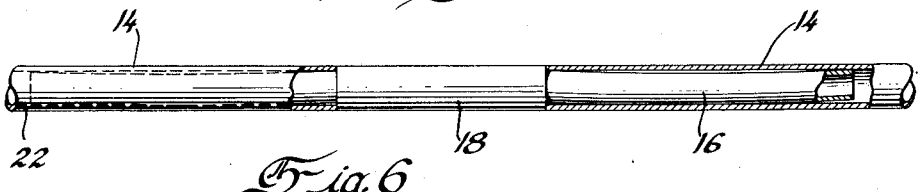


Fig. 6

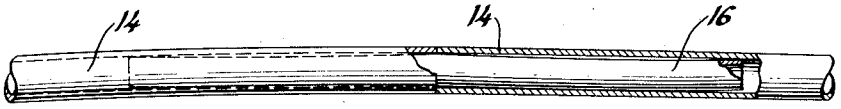


Fig. 7

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RADIO ANTENNA

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4 Claims. (Cl. 250—33)

This invention relates to radio antenna devices and more particularly to antennae adapted to be applied to mobile vehicles.

With the advent of the all-steel tops on motor cars, it has become necessary to provide some exterior mounting for radio antennae which have formerly been inserted in the hollow portion of the top. Many different designs were used from time to time but an antenna which extends above the car has proven best for reception.

It is therefore an object of our invention to provide a suitable mounting for antennae on the roof of the vehicle.

It is a further object to provide such mounting means as may be easily applied and will maintain a stationary position and be of pleasing appearance.

With these and other objects in view, the embodiments of our invention are best understood by reference to the following specification and claims and are illustrated in the accompanying drawing, in which:

Figure 1 shows a side elevation of the car with our antenna applied thereto.

Figure 2 shows a vertical section taken through the lead-in assembly.

Figure 3 is an enlarged side view of one of the spacer insulators.

Figure 4 is a bottom view of the same.

Figure 5 is a side view of the front and rear antenna spacer insulator.

Figure 6 is a side view partly in section showing the front coupling pin and,

Figure 7 is a side view partly in section showing one of the rear coupling pins.

The reception of radio waves by a set mounted in an automotive vehicle is found to be much improved when the antenna for such reception is extended substantially across the roof of the car. The antenna is illustrated at 2 as shown in Figure 1 and is a roughly inverted U-shaped tube as indicated at 4 and is supported from the top by three spacing insulators 6, 8 and 10 at the rear, center, and the front, respectively. The antenna then extends down the front following the slant of the windshield and proceeds through a suitable opening 12 in the cowl and the lead-in is then attached to the set, not shown. The antenna per se is composed of a series of sections of hollow steel tubing 14, said tubing being plated to prevent corrosion and weathering and any suitable plating material may be used such as copper, nickel with chromium as the exterior surface. The antenna is made sectional for ease in construction and shipping and in this instance is shown of four sections, the number however may be any desired number, four merely being taken as a convenient division of the given length.

The two joints in the sections immediately above the car are made by the insertion of joining pins 16 which are forced into the two adjacent ends of the two lead-in sections until the two lie adjacent each other. The end of the forward section which extends down to the upper part of the windshield is forced upon a joining pin 16 but in this instance the central portion of the pin 16 is enveloped by a short hollow cylinder 18 which separates the end 22 of the forward antenna section which extends down parallel to the windshield and the downwardly extending end of the section coming over the roof. This short member 18 is for spacing purposes and to adapt this antenna assembly to several different roof types, the length of this cylinder depending on the roof height.

The spacing insulators 6, 8 and 10 are formed of soft rubber and have suitable openings 26 therethrough in which the antenna rod is carried. The lower surfaces of each of these, such as at 28, are roughened and are secured to the upper surface of the roof by glue.

Section 22 has a looped or curved end portion 24 to which the lead-in connection is made. Insertible in the opening 12 in the cowl is a bushing 30 having an extending ring portion 32, the outside diameter of said bushing being threaded as at 34 for a tightening clamp nut 36. Carried on the extending lip 32 is a lock washer 38 which is seated directly against the under surface of the cowl. Directly over the cowl is a sealing gasket 40 which presses against a washer 42 which is in turn held tightly down by the aforementioned clamp nut 36.

The bushing 30 is extended below the lip portion 32 and has secured thereto a metal shielding 44 by solder or otherwise. Carried directly within the bushing 30 is a soft rubber insulator 46 which extends throughout the length of the bushing and entirely surrounds a lead-in conductor 48. Between the lead-in conductor and the insulator is a thin metallic sleeve 50 which mechanically supports the end of the conductor and to which it is rigidly secured such as by soldering, said outer end of the member 50 being threaded for securing purposes which will be evident.

A hollow internally screw-threaded cap 52 is provided to fit down over the protruding end of the member 50 and has a central opening 54 in the upper end thereof adapted to enclose a small machine screw 56, the head of which is enclosed

within the cap 52 and the threaded portion extends up into a threaded section 58 held rigidly in the downwardly extending end of the antenna section 24. The screw 56 may be threaded into the member 58 and then the cap 52 tightened down on the insulator assembly to insure a tight joint. It is thus evident that the currents flowing in the cable 48 are insulated from the body and are directly conveyed to the antenna and that the joint between the body and insulated coupling is maintained tight to prevent leakage into the car.

We claim:

1. In an antenna connection through an opening in a metal plate, an outer cylindrical sleeve secured in the opening, an insulating bushing supported within the sleeve, a hollow metal tube supported within the bushing and having one end extending therefrom and enlarged and exteriorly threaded for connection to other apparatus and a hollow flexible tube connected to the outer cylinder at the opposite end from the threaded connection.

2. In an antenna device having a multisection hollow tube, a support and insulating means for supporting the tube on the support, said support having an opening therein, an insulating bushing carried in the opening, conducting means carried in the bushing and externally threaded at the end adjacent the tube, a cap fitting thereon, threaded means clamped to the bushing by the cap and cooperating threaded means carried in the tube end whereby the assembly is secured together.

3. In an antenna connection through an opening in a metal plate, an outer cylindrical sleeve secured to said opening, an insulating bushing supported within the sleeve, an electrical cable extending through the insulating bushing, means for electrically connecting the cable to an antenna and means for supporting said cable to the outer cylindrical sleeve.

4. In an antenna connection through an opening in a metal plate, an outer cylindrical sleeve having an external flange substantially midway between the two ends, one end portion being externally threaded, said last named portion adapted to be projected through the opening in the plate, an internally threaded clamping member adapted to be threaded onto the cylindrical member and clamp the metal plate, a hollow bushing adapted to be supported inside the cylindrical sleeve and extending beyond one end of the sleeve, an electrical conductor supported within the hollow portion of the bushing, a flexible sleeve surrounding the portion of the electrical conductor extending from one end, said flexible sleeve adapted to be slipped over the outer periphery of the cylindrical sleeve for support, an externally threaded means rigidly secured to the projected end of the bushing and a cap fitted thereon adapted to secure means for connection to a desired device.

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