Sept. 10, 1940. W. VAN BENSCHOTEN 2,214,598

AUTOMOBILE RADIO ANTENNA

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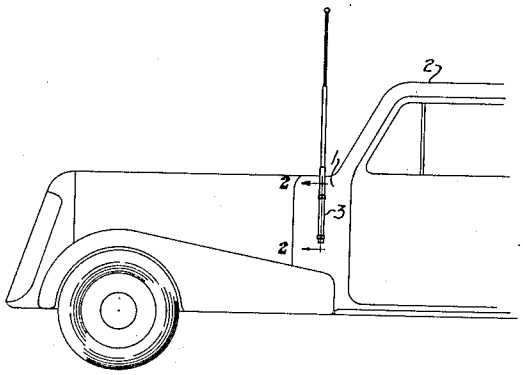
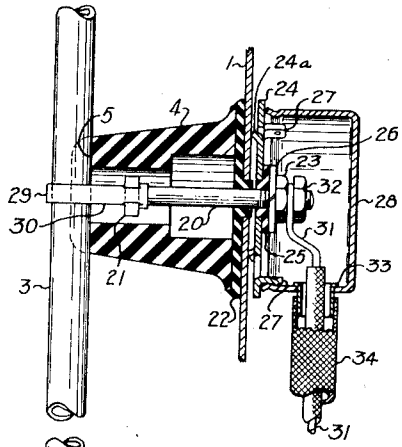


Fig. 1



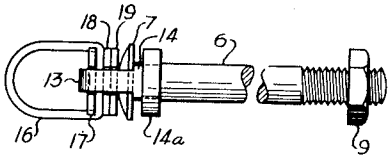


Fig. 3

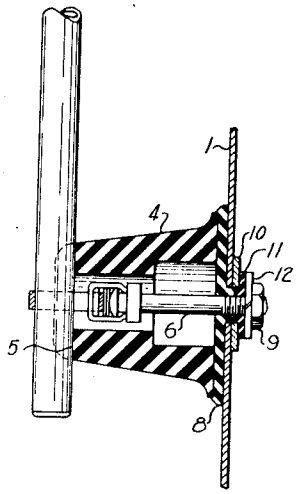


Fig. 2

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AUTOMOBILE RADIO ANTENNA

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6 Claims. (Cl. 250—33)

This invention relates, as indicated, to vehicle radio antennae, but has reference more particularly, to a radio antenna for use on automobiles or like vehicles in conjunction with radio receiving sets.

A primary object of the invention is to provide means for shielding the antenna supports and lead-in connections from various disturbances such as engine noises, tire static, etc.

Another object of the invention is to provide novel devices for connecting the antenna to the body of the automobile.

Other objects and features of the invention will appear hereinafter.

In the accompanying drawing,

Fig. 1 is a fragmentary side elevation of an automobile, illustrating the mounting of the antenna on the body;

Fig. 2 is a fragmentary vertical cross-sectional view, taken on the line 2—2 of Fig. 1, and

Fig. 3 is a plan view of the dead bolt and elements associated therewith.

Referring more particularly to the drawing, there is disclosed an adjustable mast-type antenna which is adapted to be mounted on the side of the cowl 1 of the automobile body 2. The antenna comprises an adjustable antenna rod 3 which is carried by two vertically spaced frustro-conical shaped insulators or supports 4, these insulators having vertically extending grooves 5 in their outer faces in which the antenna rod 3 is seated.

The rod is supported in the grooves or recesses 5 and against the insulators by means of devices which will now be described.

The lower of these devices comprises a threaded bolt 6 hereinafter termed the "dead bolt," because the bolt is insulated from the antenna rod, said bolt having a head 7. The shank of the bolt extends through a lower insulator 4 and through a rubber insulating washer 8, which is interposed between the base of the insulator and the cowl 1, and through the cowl. The bolt is held under tension by means of a nut 9. A bolt washer 10, shoulder washer 11 formed of an insulating material, and lock washer 12 are interposed between the inner surface of the cowl 1 and the nut 9. The washers 8 and 11 serve to insulate the shank of the bolt from the vehicle body.

The motor noises and other sounds due to the electrical system of the vehicle must not be picked up by the aerial and thus no conductor which is electrically connected to the aerial should protrude within the confines of the steel body unless it is shielded. For this reason the peculiar head construction of the dead bolt shown in Fig. 3 is employed. Secured to the head 7 of the dead bolt is a U-shaped metallic spacer 13, the arms of which are widened and curved as at 14 to partially embrace the shank of the bolt, an annular member 14a being fitted over the portions 14 of the spacer and being firmly secured to the latter as by welding. A U-shaped metallic link or strap 16 embraces the antenna rod 3 and is secured to the spacer 13. An insulating washer 17 of vulcanized fibre or other insulating material is interposed between the spacer 13 and strap 16, and similar insulating washers 18 and 19 are interposed between the head 7 of the dead bolt and the strap 16.

Thus the shank is electrically insulated from the aerial and no noises will be received by the radio due to that part of the shank passing through the body. It should be noted that the aerial is doubly insulated against grounding, first by the washers 8 and 11, and also by the "dead bolt" construction. The various parts of the device are so connected to each other as to be non-rotatable with respect to the axis of the dead bolt.

The lead-in is secured to the upper of the rod connecting devices which comprises a threaded bolt 20, hereinafter termed the "live bolt," having a head 21 and the shank of this bolt extending through the upper insulator 4. The shank is insulated from the vehicle body by extending through a rubber washer 22, which is interposed between the base of the insulator and the cowl 1, and through the cowl. The bolt is held under tension by means of a nut 23. A metallic ground washer 24 is mounted on the live bolt by means of a shoulder washer 25 of hard rubber or other insulating material, a lock washer 26 being interposed between the washer 25 and the nut 23.

The washer 24 is maintained in spaced relation to the rear face of the cowl by means of a plurality of circumferentially spaced prongs 26, which are struck from the metal of the washer 24. The washer 24 also has struck therefrom a plurality of circumferentially spaced fingers or lugs 27, to which a cap or housing 28 is secured. The aerial, bolt 20 and lead-in are all electrically insulated from the body of the insulating washers 22 and 25. The aerial in turn is held by a U-shaped metallic link or strap 29 embracing the antenna rod 3, the arms 30 of the strap being rigidly secured to the head 21 of the bolt 20.

The antenna lead-in insulated wire 31 is connected to the bolt 20 by means of a nut 32. The housing 28 has secured thereto a connector 33,

and to this connector is secured a lead-in wire shield 34.

It is to be noted that the antenna rod and its supports, as well as the lead-in connections are completely insulated from the cowl of the automobile; that the antenna rod itself is suitably cushioned by the rubber washers 8 and 22, which absorb the vibrations of the rod; that the antenna rod is firmly secured to the cowl with all of the possibilities of parts becoming loosened virtually eliminated.

It is to be further noted that the housing 28 and shield 34 effectively shield the lead-in connections, and consequently, the antenna, from engine noises, static and other disturbances which are detrimental to good reception, and that the housing is effectively secured against angular displacement by virtue of the fact that the prongs 26 of the washer 24, which are somewhat pointed, dig into the metal of the cowl and hold the parts securely in position.

The antenna rod is very neatly held on the respective insulators by the straps carried by the live and dead bolt respectively, and the rod is partially carried within the outer confines of the end insulator. This construction results in an aerial which, when viewed on the car, looking from the left (Fig. 2), presents a continuous expanse of metal, generally chromed, and unbroken by any insulators or the like.

It will be understood, of course, that the invention is not limited to the specific form illustrated on the drawing and that various modifications may be resorted to without departing from the scope of the invention.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In an automobile radio antenna, the combination of an antenna rod and means for securing said rod to the cowl of the automobile, said means comprising a bolt secured to and insulated from said cowl, a spacer element secured to said bolt, a strap embracing said rod and secured to said spacer, and means insulating said strap from said spacer and bolt.

2. In an automobile radio antenna, the combination of an antenna rod and means for securing said rod to the cowl of the automobile, said means comprising a bolt secured to and insulated from said cowl, a spacer element secured to said bolt, said element comprising a U-shaped member having arms, portions of which are formed to partially embrace the shank of said bolt, a strap embracing said rod and secured to said spacer, and means insulating said strap from said spacer and said bolt.

3. A device for securing an antenna to the body of an automobile, said device comprising a bolt, a spacer secured to said bolt and a strap secured to said spacer, and insulating elements insulating said strap from said spacer and bolt, said bolt, spacer, strap and insulating elements constituting a unitary device, and said strap and spacer being non-rotatable with respect to the axis of said bolt.

4. A device for securing an antenna to the body of an automobile, said device comprising a bolt, a spacer secured to said bolt, said spacer comprising a U-shaped member having arms, portions of which are formed to partially embrace the shank of said bolt, a strap secured to said spacer, and insulating elements insulating said strap from said spacer and bolt, said bolt, spacer, strap and insulating elements constituting a unitary device, and said strap, spacer and insulating element being non-rotatable about the axis of said bolt.

5. In an automobile radio antenna, the combination of an antenna rod, and means for securing said rod to the cowl of said automobile, said means comprising a bolt, a washer mounted on and insulated from said bolt and having prongs spacing said washer from the inner surface of said cowl, a lead-in wire secured to said bolt, and a cap secured to said washer and covering the connection of said lead-in wire with said bolt.

6. In an automobile radio antenna, the combination of an antenna rod, a hollow insulator interposed between said rod and automobile, and means for securing said rod to said insulator, said means comprising a bolt having a head disposed within said insulator, means secured to said bolt and embracing said rod, and means insulating said last-named means from said bolt.

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