

Aug. 20, 1940.

K. STIEF

2,212,253

ANTENNA FOR RECEIVING RADIO TRANSMISSIONS IN AUTOMOBILES

Filed July 9, 1937

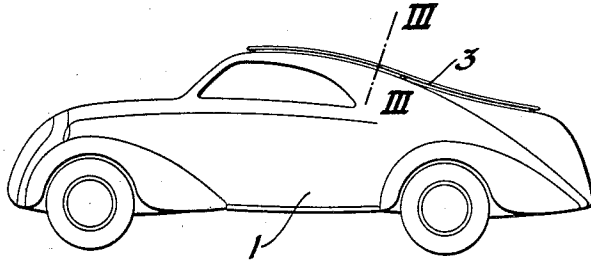


Fig. 1

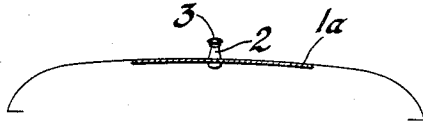


Fig. 3

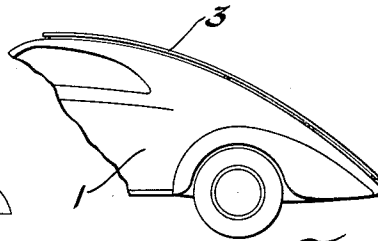


Fig. 2

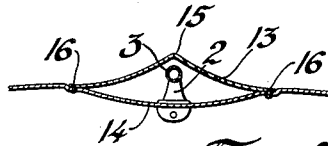


Fig. 5

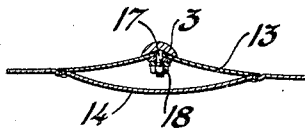


Fig. 6

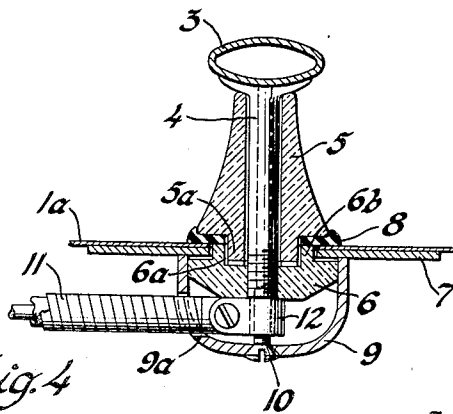


Fig. 4

Inventor

Karl Stief

By

Blackmore, Jones & Trust
Attorneys

UNITED STATES PATENT OFFICE

2,212,253

ANTENNA FOR RECEIVING RADIO TRANSMISSIONS IN AUTOMOBILES

Karl Stief, Mainz, Germany, assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Application July 9, 1937, Serial No. 152,690
In Germany July 11, 1936

2 Claims. (Cl. 250—33)

This invention relates to improvements in antennae for receiving radio transmissions in automobiles.

It is an object of my invention to arrange the antenna in such a way that radio transmissions can be received in automobiles having an all-steel body, which is a great obstacle for radio waves.

Another object of my invention is the arrangement of the antenna in such a manner that the appearance of the car is not affected.

A further object of my invention is to arrange the antenna on a stream-lined car so that the air resistance when driving at high speeds is not seriously enlarged so that the advantage of the stream-lining is maintained.

Other objects of my invention will more clearly appear from the following description of some embodiments of the invention which are shown in the accompanying drawing.

In the drawing:

Fig. 1 is a side view of an automobile provided with an antenna.

Fig. 2 shows the antenna applied to a slightly modified form of car.

Fig. 3 is a cross-section taken on line III—III of Fig. 1.

Fig. 4 shows the connection between the antenna and the conductor leading to the receiver in detail partly in section.

Figs. 5 and 6 show modifications of the invention in cross-sectional views similar to Fig. 3.

In the drawing 1 represents the body of an automobile made of sheet metal and which is preferably formed in a stream-lined manner. The stream-lined form is more pronounced in the modification shown in Figure 2, although the car shown in Figure 1 too is formed so that the air resistance is greatly reduced in comparison with those cars which are still in general use.

In order to enable persons riding in an automobile the body of which is of the all-steel-construction type to receive radio transmissions even of more distant or less powerful transmitters, the radio sets must be provided with an antenna outside of the steel body, because the sheet metal screens off the radio waves. The antenna is according to my invention made of a rod or tube 3 which is arranged on the top of the car in its longitudinal midplane. It is held in place by means of supporting members 2 which are fastened to the top of the automobile in any conventional manner by means of screws and nuts. The members 2 may be made of ceramic material or artificial resin or any other insulating sub-

stance and if necessary provided with stiffening means such as metal inserts, or they may be metal bodies which, however, must be insulated from the car body in any convenient manner. The cross-section of the antenna rod may be circular as shown in Figure 5 or elliptic as shown in Figures 3 and 4 or of another suitable cross-section.

Preferably at one end the antenna is connected to the conductor which leads to the radio set. A preferred form of this connection is shown in detail in Figure 4. To the antenna 3 a metal piece 4 is attached for instance by soldering or welding. Piece 4 passes through an opening in the sheet metal panel 1a forming the top of the car and covered at the inside with a lining 7 as usual. The lower end of piece 4 is fastened to a wire 11 leading to the radio set and which is as usually rubber insulated and provided with a protecting sheath. Piece 4 is surrounded by insulating bodies or members 5 and 6 preferably of a ceramic material. Member 5 is arranged on the outer side of the top panel 1a whereas member 6 surrounds the lower portion of piece 4. An annular extension 5a of the bottom of member 5 extends into a recess 6a which is formed by a flange 6b provided on the upper side of member 6. Between member 5 and top panel 1a a grommet 8 preferably made of soft rubber is inserted, in order to prevent rattling and the entrance of rain. For holding the parts together member 6 the central opening of which is threaded, is screwed on the lower end of piece 4 which is provided with corresponding threads. The end of the conductor 11 is provided with a clamping device 12 by means of which it is fastened to the end of piece 4. The assembly is arranged inside a cap 9 the rim of which is pressed against lining 7 by means of a screw 10 which is screwed into a threaded bore of piece 4. Cap 9 is provided with an opening 9a through which the conductor 11 passes.

It may be added that the other antenna supporting members 2 may be constructed and attached in a similar manner except that in these cases no conductors are connected to the lower ends of the metal pieces 4.

The modification shown in Figure 5 is characterized by the fact that the antenna 3 is protected against dirt and rain by means of a roof 13 made of a material that does not affect the radio waves, preferably Bakelite or another artificial resin or cellulose product. The top of the car has a shallow groove 14, and the roof 13 is fastened to the recessed border of the groove

preferably by means of screws 16. The roof 13 has a ridge 15 by which the top of the car obtains a neat appearance.

In the modified form shown in Figure 6 the antenna 3 which has a suitable crescent-shaped cross-section is arranged on the ridge of the roof 13 of insulating material. It is fastened by means of screws 17 and nuts 18. Preferably at one end of the antenna a construction similar to that shown in Figure 4 is provided for connecting the antenna with the wire leading to the radio set.

I have in the foregoing described some embodiments of the invention. It will, however, be understood that the invention is not limited to these specific constructions but extends to all modifications coming within the scope of the appended claims.

I claim:

1. Antenna for receiving radio transmissions in automobiles having a non-collapsible top, comprising a strip of non-conductive material

extending longitudinally over the top of the automobile and arched transversely so that only the edges of the strip are in contact with the top panel to which they are secured, a conductor extending longitudinally in the middle of, and attached to, said strip, and means for connecting the said conductor with the radio set.

2. Antenna for receiving radio transmissions in automobiles having a non-collapsible top, comprising a conductor extending longitudinally over the top of the automobile, insulating means for supporting the conductor at a substantially equal distance from the top of the automobile, means for connecting said conductor to a radio set, said top provided with a shallow groove, the conductor supporting means being attached to the bottom of the groove and a roof made of non-conducting material spaced from and covering said conductor which at the borders of the groove fits smoothly to said top and is provided with a ridge over said conductor.

KARL STIEF.