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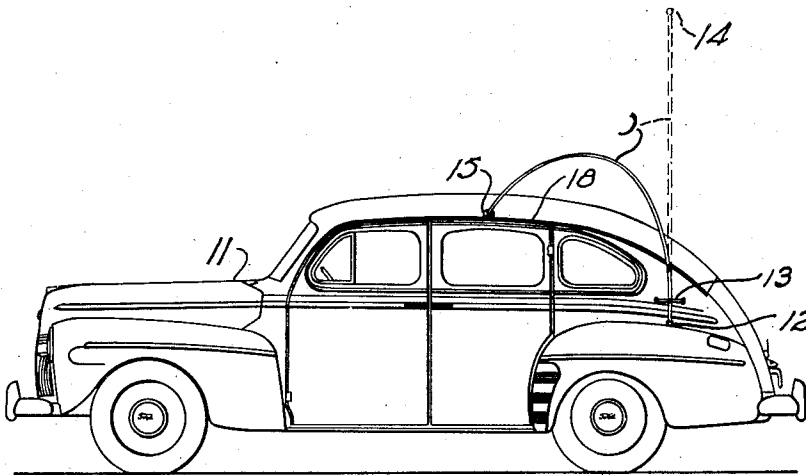


Fig. 1

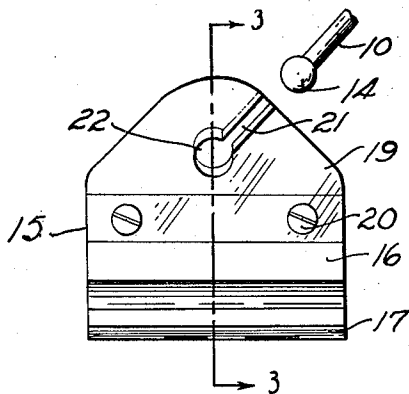


Fig. 2

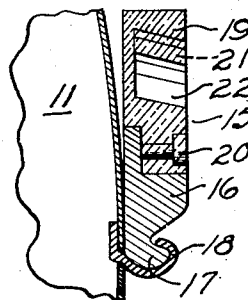


Fig. 3

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1 Claim. (Cl. 250—33)

This invention relates to radio equipment; and, more particularly, to an antenna designed to be attached to a motor car or other mobile object for the transmission of radio signals.

This invention concerns a transmitting antenna which may be used on automobiles, boats or aircraft in connection with the transmission of short wave radio signals. To permit mobility and avoid damage on physical interference with outside objects, these antennas are generally in what is known as the "whip" form. That is to say, a strong, flexible rod of relatively small diameter is mounted vertically on the vehicle and supported thereon at its base. The length of this rod is usually taken, for reasons well known to those engaged in the art, as one quarter of the length of the wave of the signal to be transmitted over the antenna since this gives the maximum output efficiency.

The whip antenna, when proportioned according to formula is usually upwards of six feet in length and when installed on any of the available places of mounting on the vehicle necessarily projects a considerable distance above the top of the vehicle. While operating in open country, this is not undesirable but when the vehicle is used on roads with overhanging trees or under viaducts or in entering and leaving garages, sheds, etc., the antenna will strike these outside objects and while its inherent flexibility prevents its destruction it is subject to damage and interference with the signals being transmitted. This defect has been recognized in the past and telescopic or pivoted antennas developed but neither of these is suitable for transmission purposes.

Therefore an object of this invention is to devise a means by which a whip antenna may be selectively secured in a position in which operating efficiency is insured and yet the antenna is not subject to interference with outside objects. It is a further object of this invention to devise an antenna which may be secured in a plurality of different positions with respect to the vehicle upon which it is mounted to obtain different elevational clearances and yet maintain the operating efficiency of the antenna throughout.

Other advantages will be apparent from the following description of the device itself and the method of application.

With these and other objects in view, the invention consists in the arrangement, construction and combination of the various parts of the improved device as described in the specification,

claimed in the claim and illustrated in the accompanying drawing in which:

Figure 1 is an elevation of a motor vehicle upon which the antenna is mounted.

Figure 2 is an elevation on an enlarged scale of the retaining device.

Figure 3 is a section through Figure 2 taken on the line 3—3 thereof.

Referring to Figure 1, the antenna 10 is shown installed on a motor vehicle 11, the lower end of the antenna being fixedly secured in an insulator 12 traversing the body wall adjacent the top of the fender and braced by a stirrup bracket 13 also insulatingly fixed on the body of the car above the insulator 12. The antenna 10 is the conventional whip type in the form of a flexible rod of small diameter and has a ball 14 formed at its upper end. So far, this represents the conventional structure and mounting used with this type of radio equipment.

The normal position of the antenna is shown in dotted outline in Figure 1 in which it extends vertically above the car. The alternative position shown in full line is that used when the antenna would be subject to interference from outside objects and it is held in this position by a retainer 15 which is shown in greater detail in Figures 2 and 3.

As shown in these figures, the retainer 15 comprises a base 16, preferably made of metal, and which has a hook 17 formed thereon which is engaged in the drip mold 18 of the automobile. This may be done by engaging the tip of the hook 17 in the mold 18 while holding the retainer horizontally, erecting the retainer and deforming the mold to secure the retainer permanently. The top 19 is made of insulating material, in this case "Lucite" or an equivalent and is rigidly secured to lower portion by screws 20. A slot 21, having ball end 22 is formed in the top 19 and as installed on the vehicle, the slot is directed rearwardly and upwardly longitudinally of the vehicle 11 and inwardly and upwardly transversely thereof. A slot of this configuration will receive the ball tip 14 and a portion of the antenna 10 which may be snapped into it, and maintain it in position shown in full line in Figure 1, the resiliency of the whip antenna being a sufficient locking means.

The advantage of this construction over the conventional telescopic or pivoted antennas is that the operating characteristics of this antenna are not appreciably disturbed by being sprung down as long as there is no decrease in its actual length. Thus, though the field strength may be

decreased slightly due to the lower elevation of the antenna in its down position, tests have shown that this results in an audible signal diminution of less than 3 decibels at a distance of 20 miles with the usual motor vehicle transmitter equipment when the bow in the antenna is semi-circular or less. This is inconsequential in so far as practical operation is concerned and is far superior to the results obtained with antennas which must be pivoted or telescoped to obtain necessary road clearance. The former—in the lengths required—are cumbersome and unwieldy and the points of application to the vehicle are limited. The latter, of course, require an actual decrease in the effective length of the antenna giving less efficient characteristics.

Another advantage is the fact that the antenna may be released from the retainer when operating in clear country to obtain maximum field strength; and this is done by merely pulling the antenna slightly forward and outwardly, disengaging it from the retainer—merely the reverse of the procedure by which it is inserted and held therein. The simplicity of this device and its arrangement may be readily understood from the drawing. Its use of an existing structural portion of the car for its attachment requires no disfiguring or mutilation of the car body itself. Furthermore, it consists of but two simple parts (or these may be made integral if that is desired) and offers an extremely economical construction. Heretofore various expedients have been tried to obtain the necessary road clearance and still maintain an operating condition of the antenna but none has been particularly satisfactory. Certainly none has had the simplicity and economy of the device which is here disclosed and claimed.

Some changes may be made in the arrangement, construction and combination of various parts of the improved device without departing from the spirit of the invention and it is the intention to cover by the claim such changes as may reasonably be included within the scope thereof.

The invention claimed is:

In an antenna arrangement for a vehicle, a whip antenna having its lower end rigidly and insulatedly secured to said vehicle, the upper end of said antenna normally extending freely and substantially vertically therefrom, an enlargement at the upper end of said antenna, a retaining means insulatedly secured on said vehicle, an oblique slot formed in said retaining means, the outer portion of said slot formed to receive a portion of said antenna and the inner portion of said slot being enlarged thereover to receive the enlarged portion of the end of said antenna, said antenna being adapted to be flexed by moving said free end downwardly to releasably engage said enlarged portion thereof in the enlarged portion of said slot and to be maintained thereby in bowed fixed relationship with said vehicle, said retaining means being secured on said vehicle at a point spaced horizontally from and vertically above the fixed lower end of said antenna but separated therefrom a distance substantially less than the length of said antenna, said antenna maintaining a substantial clearance from said vehicle throughout the greater part of the length of said antenna.

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