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M. J. TRUDNAK, JR., ET AL
MOTOR VEHICLE RADIO ANTENNA

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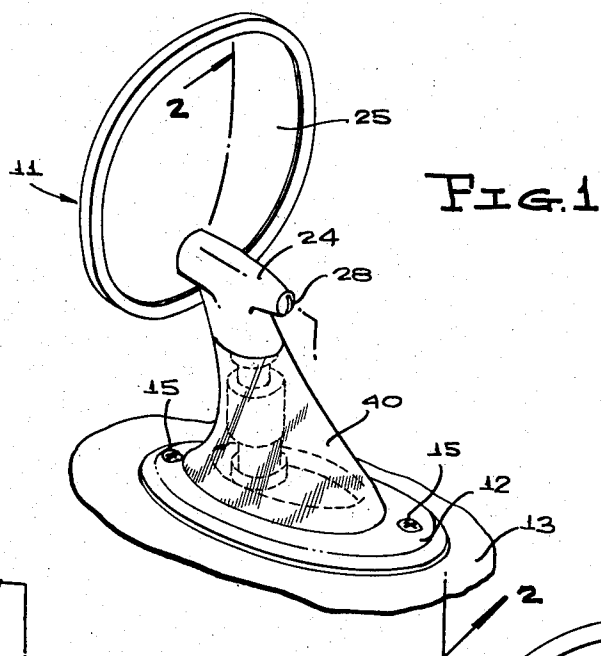


FIG. 1

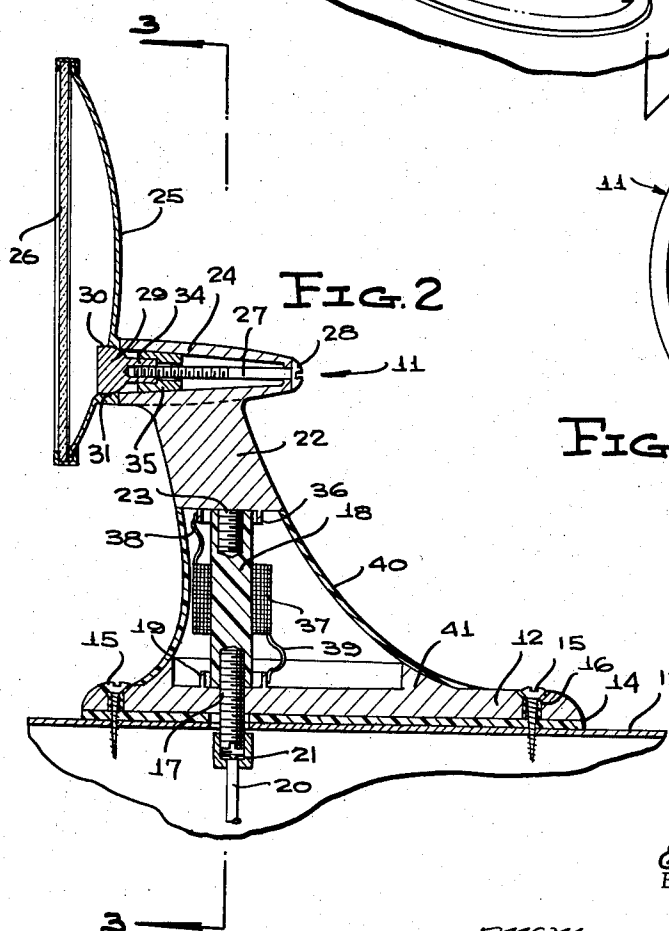


FIG. 2

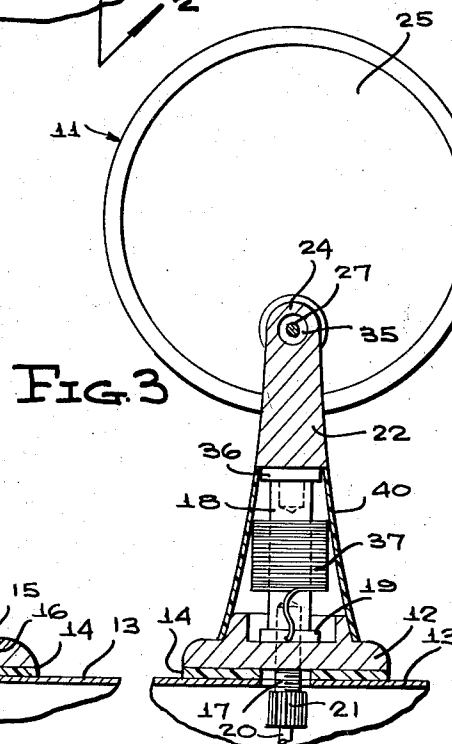


FIG. 3

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This invention relates to radio antenna assemblies for motor vehicles, and more particularly to an antenna assembly particularly adapted for use on one of the fenders of a vehicle, namely, a fender within the range of view of the vehicle operator, so that the antenna becomes an integral part of a rear view mirror.

A main object of the invention is to provide a novel and improved motor vehicle radio antenna which is simple in construction, which is easy to install, and which is an especially adapted combination antenna and rear view mirror for use on one of the fenders of a modern automobile.

A further object of the invention is to provide an improved motor vehicle antenna assembly which is inexpensive to manufacture, which is neat in appearance, which is durable, which combines an antenna within a rear view externally mounted mirror, and which is efficient in operation.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, in which:

Figure 1 is a rear perspective view of an improved motor vehicle radio antenna assembly constructed in accordance with the present invention.

Figure 2 is a longitudinal vertical cross sectional view taken on the line 2-2 of Figure 1, to an enlarged scale.

Figure 3 is a vertical cross sectional view taken on the line 3-3 of Figure 2.

Referring to the drawings, the radio antenna assembly is designated generally at 11 and comprises a metal base member 12 of substantial area, said base member being adapted to be secured on a portion of the motor vehicle body 13, for example, on one of the front fenders thereof, at a location within view of the operator of the motor vehicle. The base 12 is insulated from the motor vehicle body 13 by a layer of insulating material 14 disposed between the base member 12 and the surface of body 13, the fastening screws 15 employed to secure the base member to the body being likewise insulated from the base member by means of suitable insulating bushings 16, as shown in Figure 2. Thus, respective fastening screws 15 are employed at the forward and rear end portions of the base member, as shown in Figure 1, the base member being, for example, of generally oval shape.

Designated at 17 is a stud member which threadedly engages the base member 12, extending threadedly there-through, and which is threadedly engaged in the bottom end of a post member 18 of insulating material, for example, of polystyrene plastic material. As shown in Figure 2, the post member 18 is centrally received in an upstanding collar element 19 integrally formed in the base member 12. The stud member 17 extends through apertures formed in the insulating lining 14 and the vehicle body wall 13 and is adapted to be connected to the antenna lead-in wire 20 of the motor vehicle radio receiver, as shown in Figure 2. A suitable conventional connector 21 is provided on the lead-in cable 20, said

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connector 21 conductively engaging and being secured to the bottom end of the stud member 17.

Designated at 22 is a bracket member formed with a depending stud 23 which threadedly engages in the top end of the insulating post member 18, thus rigidly securing the bracket member 22 above the base member 12. The bracket member 22 preferably is of substantial horizontal area so that it has a substantial amount of capacity relative to the base member 12.

Bracket member 22 is formed at its top end with the horizontally extending tubular portion 24 of convergent internal diameter. Adjustably secured to the tubular top portion 24 of the bracket member is a mirror housing 25 in which a rear vision mirror 26 is mounted.

As shown in Figure 2, a longitudinal bolt 27 extends through the tubular member 24, the head of the bolt 28 being engaged against the end of said tubular member opposite the mirror housing 25. The forward end of the bolt 27 is threadedly engaged in a head member 29 having a spherical forward portion 30. The spherical head portion 30 engages an annular seat portion 31 provided on the lower marginal portion of the mirror housing 25, allowing said mirror housing to be angularly adjusted. The shank portion 34 of member 29 engages in a wedging collar 35 disposed inside the convergent tubular member 24, whereby tightening of the bolt 27 increases the bearing force between the spherical portion 30 of member 29 and the seat 31, whereby said bearing force may be adjusted to a desired degree, sufficient to maintain the mirror housing 25 in its intended position of angular adjustment.

The bottom end of the bracket member 22 is integrally formed with a depending collar element 36 which surrounds the top end of the insulating post member 18.

Mounted on the post member 18 is a "lattice-wound" antenna coil 37 whose end terminals 38 and 39 are respectively connected to the collar elements 36 and 19. As is well understood, a "lattice-wound" antenna coil is a coil constructed from one individual washer-shaped coil consisting of a number of layers wound over each other, in the present application designed to resonate, in conjunction with the conducting bracket member and conductive base member, with the radio frequency input circuit of a conventional vehicle radio receiver.

As previously mentioned, there is substantial electrical capacity between the bracket member 22 and the base member 12, and this capacity may be adjusted to a desired amount by suitably designing the length of the post member 18, whereby to provide a desired spacing between the bracket member 22 and base member 12, and whereby to thus provide a predetermined amount of electrical capacity therebetween. The antenna coil 37 is connected in parallel with the members 22 and 12, thus providing a tuned circuit which may be designed so as to substantially resonate to a desired frequency band. Both elements of the capacitance of the resonant circuit may be employed as signal collectors, the element 22 being particularly effective since it is elevated above the body 13 of the motor vehicle and is separated therefrom by the insulating post 18, whereby it serves not only as a signal collector but also as the plate of a capacitor included in the antenna circuit.

Designated at 40 is a housing member of suitable, relatively rigid insulating material, such as plastic material, the housing member being mounted on base member 12 and surrounding the post member 18 and coil 37, as clearly shown in Figure 2. The housing member 40 is of downwardly divergent shape, conforming to the general contour of the top surface of base member 12 and being suitably secured thereon, for example, on a generally oval rib element 41 integrally formed on base member 12 and projecting upwardly therefrom. The top rim of

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the housing member 40 engages beneath the peripheral portion of the bottom end of bracket member 22, as shown in Figure 2, being held thereagainst by the connection of the bracket member to the top end of post member 18. Thus, as is apparent from Figures 2 and 3, the top portion of housing member 40 is substantially flush with the stem portion of bracket member 22, thus providing a smooth and pleasing contour.

The resonant circuit associated with the antenna assembly obviously provides substantial signal gain for the reception of the band of frequencies to which it is adjusted, eliminating the necessity of a large signal collector. As previously mentioned, the bracket member 22 supports the rear view mirror 26 which may be employed in the ordinary way, serving not only the purpose of a support for the mirror but also as a main signal collector element for the antenna assembly.

While a specific embodiment of an improved motor vehicle radio antenna assembly has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In a motor vehicle radio antenna, a conductive base member adapted to be secured to a vehicle body, a layer of insulating material disposed beneath and being substantially coextensive in area with said base member, said layer being adapted to electrically insulate said base member from the body, an up-standing supporting member of insulating material secured to said base member, a conductive bracket member rigidly secured on said supporting member in overlying relation to said base member and being adapted to supportingly receive a rear view mirror, said bracket member having a substantial amount of electrical capacity with said base member, an antenna coil mounted on said supporting member, the ends of said coil being electrically connected respectively to said conductive bracket member and to said conductive base member, whereby the capacitance defined by said bracket member and said base member is connected in parallel with said coil to define a tuned circuit, and a terminal secured to said base member.

2. In a motor vehicle radio antenna, a conductive base member of substantial area adapted to be secured to a vehicle body, a layer of insulating material disposed beneath and being substantially coextensive in area with said base member, said layer being adapted to electrically insulate said base member from the body, a supporting member of insulating material secured to said base member, a conductive bracket member of substantial area in a direction parallel to said base member rigidly secured on said supporting member above said base member in overlying relation thereto and being adapted to support-

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ingly receive a rear view mirror, said bracket member having a substantial amount of electrical capacity with said base member, an antenna coil mounted on said supporting member, the ends of said coil being electrically connected respectively to said conductive bracket member and said conductive base member, whereby the capacitance defined by said bracket member and said base member is connected in parallel with said coil to define a tuned circuit, and a terminal secured to said base member.

3. In a motor vehicle radio antenna, a conductive base member of substantial horizontal area adapted to be secured to a vehicle body, an upstanding supporting member of insulating material secured to said base member, a conductive bracket member of substantial horizontal area secured rigidly on said supporting member above and parallel to said base member and being adapted to supportingly receive a rear view mirror, an antenna coil mounted on said supporting member, the ends of said coil being electrically connected respectively to said conductive bracket member and said conductive base member, whereby the capacitance defined by said bracket member and said base member is connected in parallel with said coil to define a tuned circuit, and a terminal secured to said base member.

4. In a motor vehicle radio antenna, a conductive base member of substantial horizontal area adapted to be secured to a vehicle body, a layer of insulating material disposed beneath and being substantially coextensive in area with said base member, said layer being adapted to electrically insulate said base member from the body, an upstanding supporting member of insulating material secured to said base member, a conductive bracket member of substantial area in a direction parallel to said base member secured rigidly on said supporting member above and in overlying relation to said base member and being adapted to supportingly receive a rear view mirror, said bracket member having a substantial amount of electrical capacity with said base member, an antenna coil mounted on said supporting member, the ends of said coil being electrically connected respectively to said conductive bracket member and said conductive base member, whereby the capacitance defined by said bracket member and said base member is connected in parallel with said coil to define a tuned circuit, a terminal secured to said base member, and a housing member of insulating material mounted on said base member and surrounding said coil and said supporting member.

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