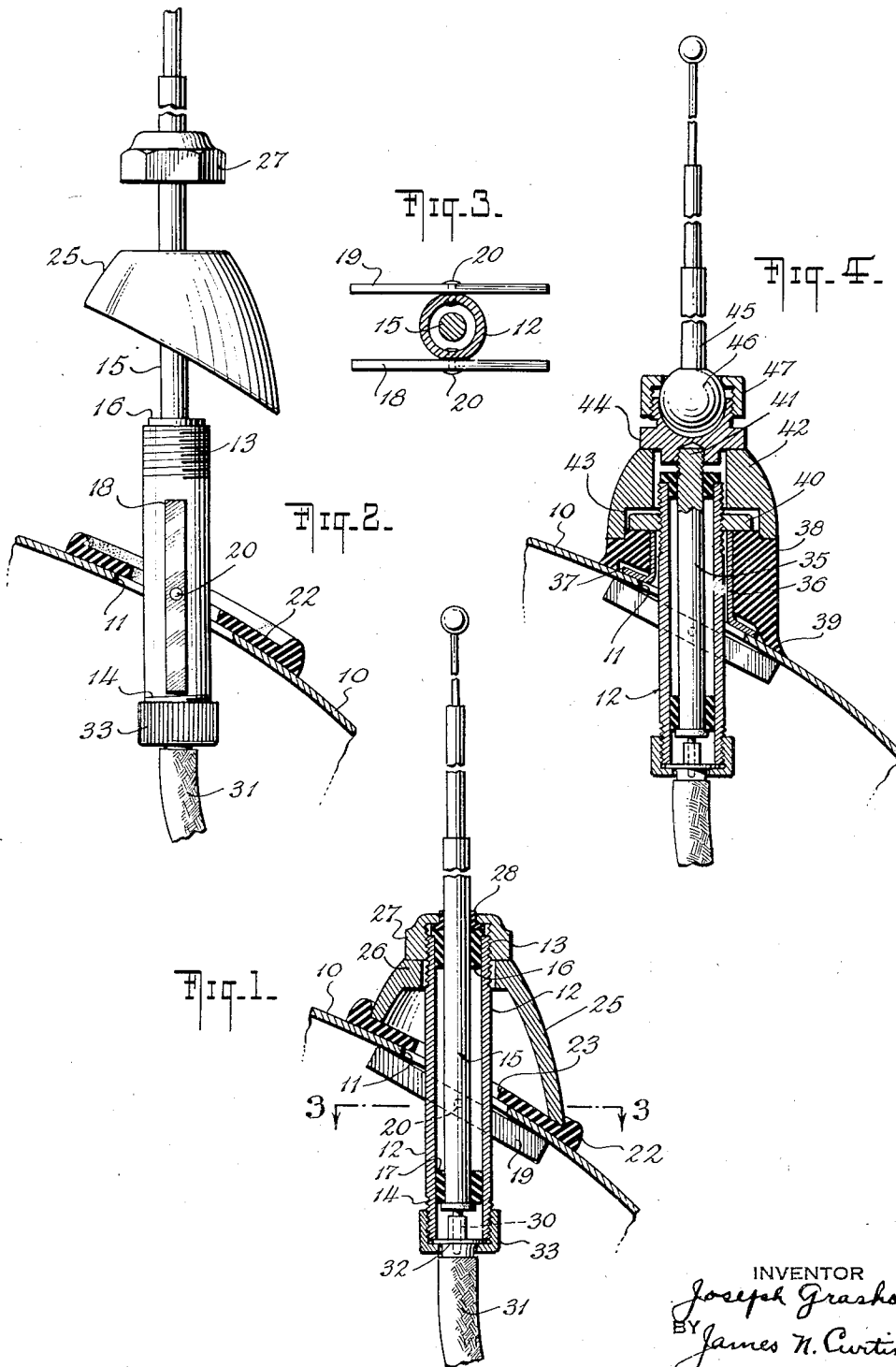


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AUTOMOBILE ANTENNA

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AUTOMOBILE ANTENNA

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This invention relates to antennas, and more particularly to an antenna which may be mounted easily on the body of an automobile.

A feature of the invention is the provision of a simple and inexpensive antenna structure for automobile radio equipment having a single hole mounting which may be fastened in position from the outside of the car.

Another feature of the invention is the provision of an automobile antenna suitable for quick installation on a mass production basis. The invention contemplates an assembly including an antenna, a supporting member therefor which preferably comprises a sleeve and a flexible coaxial conductor attached to the latter to provide a connection from the antenna which may be plugged into a suitable jack on the radio set. A mounting hole is bored in a suitable location in the car body, such as the cowl or fender and the flexible conductor and a part of the sleeve are thrust through the opening. The sleeve is provided with an arrangement for engaging and gripping the under surface of the car body when an external lock nut thereon is tightened, thus securing the antenna in place. This arrangement eliminates the expensive, time consuming practice of attaching mounting brackets and other securing devices for antennas on the interior of the car body where the worker is almost always handicapped by having to work in cramped quarters.

Other objects and features of the invention will be found in the following description given with the aid of the accompanying drawings, in which

Fig. 1 is a sectional view of an antenna according to a preferred embodiment of the invention;

Fig. 2 is an exploded view of a portion of the antenna of Fig. 1;

Fig. 3 is a section taken through 3—3 of Fig. 1; and

Fig. 4 is a sectional view of another type of antenna incorporating the present invention.

Referring now to Fig. 1, the reference character 10 indicates a portion of a car body having a hole 11 formed therein in which the antenna is to be mounted. The antenna structure includes a supporting sleeve 12 having threaded portions 13 and 14 adjacent the ends thereof. The base or butt portion 15 of an antenna which may be of any convenient type, such as the well-known telescoping whip variety is secured in the sleeve 12 in coaxial relation therewith by insulating bushings 16 and 17. A pair of swingable arms 18 and 19, Fig. 3, are supported by the sleeve in any con-

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venient manner. In the drawings the arms are shown as being attached directly to sleeve 12 by pivots 20. In the simpler antenna supporting arrangement, shown in Figs. 1 and 2, the sleeve 12 is thrust through opening 11 in the car body and the arms are turned cross-ways by bringing them into engagement with the under surface of the car body. Where the arms tend to be frictionally held against displacement on their pivots, they may be displaced initially by a small screw driver or the like inserted through the mounting hole. The sleeve is then turned until the pivots 20 are parallel with a horizontal diameter of the hole 11 when the sleeve will be substantially vertical and the corners of the ends of each arm will be in engagement with the car body. An arrangement for exerting an upward stress on sleeve 12 is all that is required to fasten the antenna structure to the car. Such an arrangement comprises a gasket member 22 adapted to rest against the outer surface of the car body, having a hole 23 therein through which the sleeve 12 is thrust. An ornamental spacer member 25 of any convenient shape and which may be of chrome plated metal, ebonite or the like, and provided with a central opening to receive sleeve 12 has its lower edge resting on gasket 22, the upper portion 26 of the spacer member being thickened and fitting rather closely about sleeve 12 adjacent to the upper threaded portion thereof while the lower edge portion is shaped to conform to the surface of the car body when the sleeve 12 is in substantially vertical position.

The whole assembly is held in place by a nut 27 threaded onto the threaded upper portion 13 of sleeve 12. When the nut 12 is tightened it presses against the part 26 of spacer member 25 pressing the lower edge thereof firmly against gasket 22 thereby sealing the opening 11 in the car body against the entrance of moisture and at the same time arms 18 and 19 are pressed tightly against the under surface of the car body with sufficient pressure to cause the ends of the arms to penetrate any paint or other protective coating thereon and thereby maintain a connection between sleeve 12 and the car body which serves as a ground connection for the radio equipment, not shown.

Nut 27 is preferably of the general shape of the so-called "acorn" nut, except that it is provided with a central opening having a soft rubber gasket 28 therein which fits closely about the antenna base member 15, insulating the same from the rest of the structure and shielding it from moisture.

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The antenna base or butt member 15 preferably is provided at its lower end with a contact pin 30 which serves as a central connector for a coaxial cable 31 adapted to be plugged into the radio equipment. The outer conductor of cable 31 terminates in a flanged member 32 which is adapted to be fastened to the lower end of sleeve 12 by a nut 33 which fits the lower threaded portion thereof.

The embodiment of the invention shown in Fig. 4 differs from that just described by providing a detachable antenna unit of the ball and socket type which requires a more elaborate external mounting. In the latter embodiment, a rod 35 is coaxially mounted in a sleeve 12 of similar construction as that shown in Figs. 1 and 2. Sleeve 12 extends through a tube 36 formed with a flange 37 shaped to correspond with the contour of the car body. Tube 36 is enclosed by a spacer member 38 extending somewhat beyond the upper edge of the tube and having a lower edge portion 39 which yieldingly engages the car body. A thin flat nut 40 threaded on sleeve 12, when tightened, presses the flange 37 and the lower part 39 of the soft spacer against the car body sealing the opening 11 against the entrance of moisture. The assembly just described is covered by an ornamental cap 42 having a central opening which fits over sleeve 12 and a recess 43 formed in the base thereof which encloses the nut 40 and the rest of the sleeve structure except for the threaded portion 41 of rod 35 which projects upward into the central opening of the cap 42. Cap 42 is made preferably of ebonite, Bakelite or other suitable insulating material. The cap is held in place by an ornamental nut 44 of a known type having a hemispherical depression formed in the upper surface thereof. The nut is screwed onto the threaded end portion of rod 35 and when tightened holds the cap 42 in position. The nut 44 serves as a socket for a known type of detachable antenna 45 having a ball 46 formed at the base thereof. The ball 46 which fits into the hemispherical depression in the upper surface of nut 44 is adjustably locked in position by a nut 47 which is screwed onto a threaded portion of nut 44.

What is claimed is:

1. An antenna structure adapted to be secured in an opening in the body of a car which comprises an antenna, a metallic antenna supporting sleeve adapted to be partially inserted in the opening from the upper surface of the car, insulating means for securing an end portion of the antenna in the sleeve in co-axial relation therewith, toggle means carried by the sleeve adapted to pass through the opening when the sleeve is partially inserted therein for engaging the under surface of the car body immediately adjacent the opening and providing a ground connection between the sleeve and car body, and means for exerting a withdrawing force on the sleeve to cause the toggle means to grip the under surface of the car body and thereby secure the sleeve to the car body which comprises a nut threaded on the sleeve outside of the car body.

2. An antenna according to claim 1 wherein the sleeve has insulating bushings fitted therein and the butt end of the antenna fixed in the bushings, a coaxial cable connector fixed to the latter end of the antenna and a coaxial cable having its center conductor coupled with the connector and its outer conductor secured to the sleeve.

3. An antenna structure permanently assembled

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as a unit and adapted to be secured in an opening in the body of a car which comprises an antenna supporting sleeve adapted to be partially inserted into the opening from the upper surface of the car, means pivoted to the sleeve adapted to pass through the opening and engage the under surface of the car body immediately adjacent the opening, a nut threaded on a portion of the sleeve outside of the car body adapted on the tightening thereof to exert pressure on the outer surface of the car body and cause the pivoted means to grip the under surface of the car body and thereby secure the sleeve to the car body and means within the bore of the sleeve for securing the butt end of the antenna thereto.

4. An antenna adapted to be secured in an opening in the body of a car which comprises an antenna supporting sleeve adapted to be partially inserted into the opening from the upper surface of the car, a pair of arms independently pivoted to the sleeve adapted to pass through the opening on the insertion of the sleeve and with the partial withdrawal thereof to engage the under surface of the car body adjacent the opening, a nut threaded on an outer portion of the sleeve adapted on the tightening thereof to exert pressure on the outer surface of the car body and thereby cause the arms to grip the under surface of the car body and thereby secure the sleeve in the opening and means for securing the butt end of the antenna within the bore of the sleeve.

5. An antenna according to claim 4 in which the sleeve is made of a suitable metal and the antenna is coaxially mounted therein but insulated therefrom, and wherein the arms provide a ground connection between the sleeve and car body.

6. An antenna according to claim 4 wherein the sleeve has insulated bushings fitted therein and the butt end of the antenna is fixed in the bushings, a coaxial cable connector fixed to the latter end of the antenna and a coaxial cable having its center conductor coupled thereto and its outer conductor secured to the sleeve.

7. An antenna adapted to be secured in an opening in the body of a car which comprises an antenna supporting sleeve adapted to receive the butt end of a whip-like antenna to be partially inserted into the opening from the upper surface of the car, swingable means carried by the sleeve adapted to pass through the opening on the insertion of the sleeve and with the partial withdrawal thereof to engage the under surface of the car body adjacent the opening, a nut threaded on the outer portion of the sleeve adapted on the tightening thereof to exert pressure on the outer surface of the car body and thereby cause the swingable means to grip the under surface of the car body and thereby secure the sleeve in the opening, and spacer means disposed on the sleeve between the nut and the car body for maintaining the sleeve in predetermined angular position with respect to the car body.

8. An antenna according to claim 7 in which the sleeve is made of a suitable metal and the antenna is coaxially mounted therein but insulated therefrom, and wherein the swingable means provides a ground connection between the sleeve and car body.

9. An antenna according to claim 7 in which the sleeve has insulated bushings fitted therein and the butt end of the antenna is fixed in the bushings, a coaxial cable connector fixed to the latter end of the antenna and a coaxial cable

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extending into the lower end of the sleeve and having its central conductor coupled with the connector and its outer conductor secured to the sleeve.

10. An antenna according to claim 7 in which the swingable means comprises a pair of individually adjustable independent arms and individual pivots therefor secured to the sleeve.

11. An antenna of the whip type adapted to be secured in an opening therefor in the body of an automobile which comprises a rigid supporting sleeve secured to the butt end of the antenna adapted to be inserted from the upper surface of the automobile part way into the opening, means comprising a plurality of pivoted arms carried by the sleeve arranged initially to rest against the sides of the sleeve in co-alignment therewith to permit passage of the arms and a portion of the sleeve through said opening whereupon the arms may be manipulated from above the upper surface of the automobile body to turn on their pivots and assume positions crosswise of the opening and engage the under surface of the automobile body, and means comprising a nut threaded onto the upper portion of the sleeve for exerting a withdrawing force on the sleeve from the upper surface of the automobile body to cause the arms to grip the under surface thereof and thereby secure the sleeve to the automobile body.

12. An antenna according to claim 11 in which the sleeve is made of a conducting material and

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the antenna is coaxially mounted therein but insulated therefrom, and wherein the pivoted arms provide a ground connection between the sleeve and body.

13. An antenna according to claim 11 in which the sleeve is made of a suitable metal having insulating bushings fitted therein and the butt end of the antenna fixed in the bushings, a coaxial cable connector fixed to the base of the antenna and a coaxial cable having its center conductor coupled thereto and its outer conductor secured to the sleeve.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
450,127	Wrigley	Apr. 7, 1891
1,325,036	Ninow	Dec. 16, 1919
1,939,983	Karitzky	Dec. 19, 1933
2,013,503	Pleister	Sept. 3, 1935
2,167,286	Theobald	July 25, 1939
2,203,945	Roo	June 11, 1940
2,224,023	Sayen	Dec. 3, 1940
2,252,671	Ludwig	Aug. 12, 1941
2,444,189	Finneburgh et al.	June 29, 1948
2,468,391	Cejka	Apr. 26, 1949
2,473,141	Friedberg	June 14, 1949