Oct. 8, 1940. G. SNYDER 2,217,188

RADIO ANTENNA

Filed Feb. 3, 1940

Fig. 1.

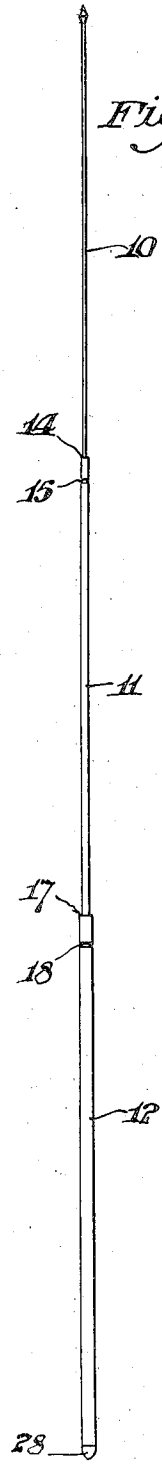


Fig. 2.

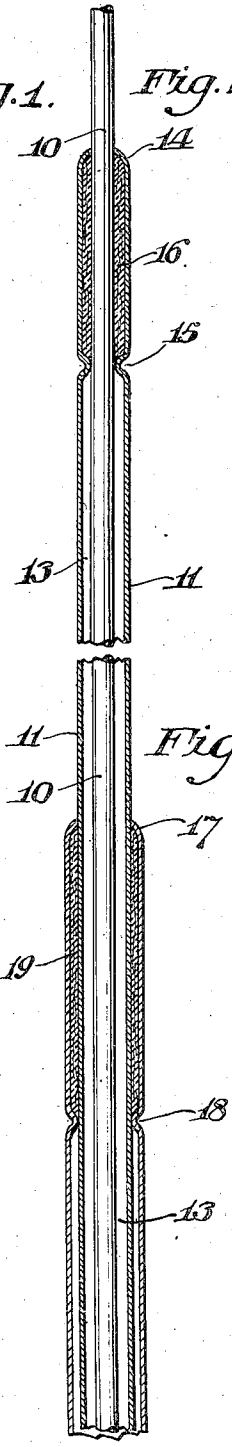


Fig. 3.

Fig. 4.

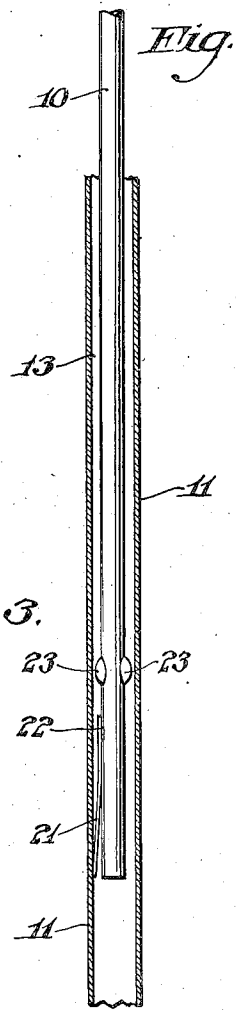
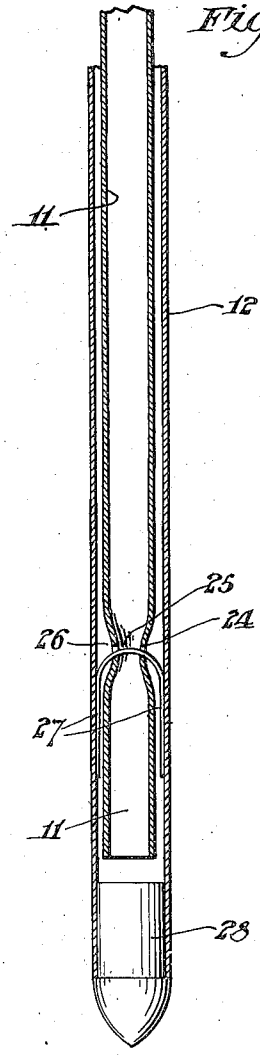


Fig. 5.



Inventor
Gerson Snyder,
By Jas. C. Wobensmith
Attorney.

Patented Oct. 8, 1940 2,217,188

UNITED STATES PATENT OFFICE

2,217,188

RADIO ANTENNA

Gerson Snyder, Philadelphia, Pa.

Application February 3, 1940, Serial No. 317,052

9 Claims. (Cl. 250—33)

This invention relates to radio antennae, and it relates more particularly to the telescopic type of antennae used on automobiles in connection with radio receiving sets in such vehicles.

Heretofore, various forms of telescopic radio antennae for use in motor vehicles have been suggested. It is customary in these devices, in which a rod and one or more tubes are telescoped with respect to each other, to provide a supply of lubricant in the tubes which facilitates the operation when the antenna is being extended or collapsed, and also serves as a preservative against corrosion of the metal.

However, when such lubricant is used, it is necessary to prevent the same from being "pumped" out when the parts are extended or retracted. For this purpose, stuffing boxes have been provided at the ends of the tubes, which not only involve expense in the construction thereof, but also increase the number of parts which tend to become loose and set up objectionable noises in the radio reception.

The principal object of the present invention is to provide an antenna for use in automobile radio systems which is so constructed and arranged that the same may be inexpensively made of a minimum number of parts.

A further object of the invention is to provide an antenna of the character aforesaid which will have the required rigidity when extended, as well as the requisite electrical characteristics.

A further object of the invention is to provide an improved form of antenna of the character aforesaid in which the lubricant will be retained within the tubular members and will be prevented from being carried out as the parts are extended.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawing forming part hereof, in which:

Figure 1 is an elevational view of a radio antenna embodying the main features of the present invention, the form shown comprising three extensible parts, to wit, a rod, an intermediate tube and a lower tube, all telescopically mounted with respect to each other;

Fig. 2 is a fragmentary section illustrating a portion of the structure at the point where the rod passes into the intermediate tube;

Fig. 3 is a similar view illustrating a portion of the structure at the point where the intermediate tube passes into the lower tube;

Fig. 4 is a similar view illustrating the lower end of the rod member and the means for making the electrical connection between said rod member and the intermediate tube in which it is mounted; and

Fig. 5 is a similar view illustrating the lower end of the lower tube and the manner in which the lower end of the intermediate tube is guided therein and electrically connected thereto.

It will, of course, be understood that the description and drawing herein are illustrative merely, and that various changes and modifications may be made in the structure disclosed without departing from the spirit of the invention.

Referring to the drawing, in the particular embodiment of the invention therein shown, the antenna comprises three principal members, to wit, a rod 10, an intermediate tube 11 in which said rod 10 is telescopically mounted, and a lower or external tube 12 in which the intermediate tube is telescopically mounted.

The internal diameter of the intermediate tube 11 is somewhat larger than the rod 10, thereby providing an annular space 13 therebetween.

The upper end of the intermediate tube 11 is curled inwardly, as at 14, to reduce the outlet thereof to an opening corresponding to the diameter of the rod 10. A short distance from the curled end of the intermediate tube 11, the same is reduced in diameter, as at 15, in the form of an internal bead, so that the internal diameter of said reduced portion 15 corresponds to that of the diameter of the rod 10.

In the space between the reduced portion 15 and the curled end 14 of the tube 11, fibrous material preferably in the form of a bushing 16 is mounted. Said fibrous material may be leather, felt, or one of the modern cellulosic materials. The fibrous bushing 16 is maintained against longitudinal movement by the inwardly curled end 14 and the internal bead 15 without the use of stuffing box glands, or similar members which might tend to loosen when the device is in use on the automobile.

The upper end of the lower or outer tube 12 is similarly formed with respect to the intermediate tube 11, that is to say, it has its upper end curled inwardly, as at 17, to provide an outlet opening corresponding to the external diameter of the intermediate tube 11 and, at a proper distance from the inwardly curled end of the lower tube 12, there is also provided a reduced portion or internal bead 18. Likewise in the space between the inwardly curled end

17 of the tube 12 and the internal bead 18, there is mounted a bushing 19 of fibrous material.

As shown in Fig. 4 of the drawing, the lower end of the rod 10 is provided with a contact spring 21 spot welded, as at 22, to said rod 10 near the lower end thereof. The free end of the spring 21 contacts with the interior surface of the intermediate tube 11, to maintain an electrical connection therewith at all positions of the rod 10 with respect thereto. Adjacent the point where the contact spring is secured to the rod 10, said rod is pinched on each side thereby to provide lugs 23 which serve to prevent the rod from being entirely withdrawn from the intermediate tube 11 when said rod is extended to its limit position.

As illustrated in Fig. 5 of the drawing, the lower end of the intermediate tube 11 is pinched, as at 24, so that there will be provided lugs 25 on each side thereof which will serve to prevent the intermediate tube 11 from being entirely withdrawn from the lower tube 12 when said tube 11 is extended to its limit position. At the point where the lower end of the tube 11 is pinched, an aperture 26 is provided, and a U-shaped spring 27 is mounted in said aperture. The legs of said spring 27 extend downwardly in the annular space between the tube 11 and the tube 12 bearing against the interior surface of the tube 12, and serving as a means for establishing an electrical connection between said tubes at all positions of the same with respect to each other.

The lower end of the rod 12 is preferably closed by means of a suitable plug 28 fitted tightly therein to prevent the discharge of the lubricant contained within the interior.

By the foregoing arrangement, there is provided a radio antenna for use on automobiles or the like, which may be inexpensively constructed, but which will have the proper mechanical and electrical characteristics notwithstanding.

The bushings of fibrous material mounted at the respective upper ends of the tubular members will prevent the lubricant from being withdrawn when the parts are extended with respect to each other, yet on the other hand, will permit sufficient air to pass to and from the interior when the parts are extended and collapsed, so that there will be no tendency of the lubricant to be pumped out. With this arrangement, the lubricant initially placed in the structure at the time of manufacture will ordinarily last for the full life of the device.

I claim:

1. In a radio antenna of the character described including a tubular member and another member telescopically mounted with respect thereto, the end of said tube where the other member passes therethrough having an integral portion extending inwardly, an internal bead formed in said tube and spaced from said inwardly extending end portion, and a bushing of fibrous material mounted in said tube between said internal bead and said inwardly extending end portion.

2. In a radio antenna of the character described comprising a rod and a plurality of tubular members telescopically mounted with respect to each other, the end of each tube where another member passes therethrough having an integral portion extending inwardly, an internal bead formed in each tube and spaced from said inwardly extending end portion, and a bushing of fibrous material mounted in each tube between said internal bead and said inwardly extending end portion.

3. In a radio antenna of the character described including a pair of tubular members telescopically mounted with respect to each other, the outer tube having an internal bead formed therein and spaced from the upper end thereof, and the inner tube having a portion near its lower end deformed to provide an extension adapted to engage the internal bead of the outer tube thereby to limit the withdrawal of the inner tube.

4. In a radio antenna of the character described comprising a rod, an intermediate tube, and a lower or outer tube, said members being telescopically mounted with respect to each other, the end of each tube where another member passes therethrough having an integral portion extending inwardly to the diameter of said other member, and an internal bead formed in each tube and spaced from said inwardly turned end portion and extending inwardly to the diameter of said other member.

5. In a radio antenna of the character described comprising a rod, an intermediate tube, and a lower or outer tube, said members being telescopically mounted with respect to each other, the end of each tube where another member passes therethrough having an integral portion extending inwardly, an internal bead formed in each tube and spaced from said inwardly extending end, and a bushing of fibrous material mounted in each tube between said internal bead and said inwardly extending end portion.

6. In a radio antenna of the character described comprising a rod, an intermediate tube, and a lower or outer tube, said members being telescopically mounted with respect to each other, the end of each tube where another member passes therethrough having an integral portion extending inwardly, an internal bead formed in each tube some distance from said inwardly extending end portion, and a bushing of fibrous material mounted in each tube between said internal bead and said inwardly extending end portion, and the lower end of the rod having a contact member making an electrical connection with the intermediate tube.

7. In a radio antenna of the character described comprising a rod, an intermediate tube, and a lower or outer tube, said members being telescopically mounted with respect to each other, the end of each tube where another member passes therethrough having an integral portion extending inwardly, an internal bead formed in each tube and spaced from said inwardly extending end portion, and a bushing of fibrous material mounted in each tube between said internal bead and said inwardly extending end portion, and the lower end of the intermediate tube having means for limiting the withdrawal of said tube and for making an electrical connection between said tubes.

8. In a radio antenna of the character described comprising a rod, an intermediate tube, and a lower or outer tube, said members being telescopically mounted with respect to each other, the end of each tube where another member passes therethrough having an integral portion extending inwardly, an internal bead formed in each tube and spaced from said inwardly extending end portion, and a bushing of fibrous material mounted in each tube between said internal bead and said inwardly extending end portion; the lower end of the rod having a contact mem-

ber making an electrical connection with the intermediate tube, and the lower end of the intermediate tube having a contact member making an electrical connection with the lower tube.

9. In a radio antenna of the character described comprising a rod, an intermediate tube, and a lower or outer tube, said members being telescopically mounted with respect to each other, the end of each tube where another member passes therethrough having an integral portion extending inwardly, an internal bead formed in each tube and spaced from said inwardly extending end portion, and a bushing of fibrous material mounted in each tube between said internal bead and said inwardly extending end portion; the lower end of the rod having a contact member making an electrical connection with the intermediate tube, the lower end of the intermediate tube having a contact member making an electrical connection with the lower tube, and a closure plug mounted in the lower end of the lower tube.

GERSON SNYDER.