Aug. 20, 1940. E. RICHTER 2,212,128

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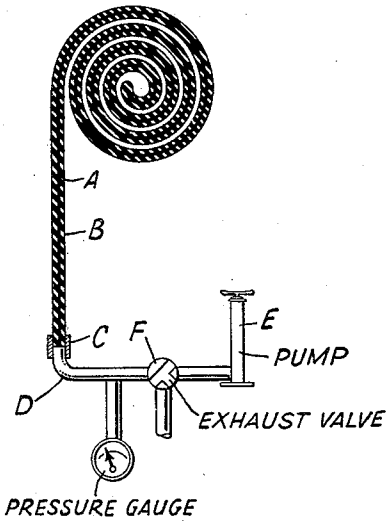

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6 Claims. (Cl. 250—33)

This invention relates to an antenna which is particularly adapted for use on vehicles and power craft.

It is an object of my invention to provide an antenna which, when in operation, can be held in a relatively rigid up-right position, but when not in use may be wound up in a spiral coil so that it will occupy little space and be both inconspicuous and out of the way of obstacles.

Further objects and advantages of my invention will be made clear in the following description, which will be best understood by reference to the accompanying drawing, the sole figure of which illustrates a preferred embodiment of the invention.

It is a characteristic feature of the invention that the antenna conductor is made of elastic or resilient material having internal stresses such that when in a state of repose it tends to form itself into a spiral coil. This conductor I preferably arrange in attachment with a collapsible tube of rubber or other elastic material. The tube itself should be closed at one end and provided at the other end with a pneumatic valve of some sort. The tube when collapsed may be wound between the convolutions of the conductor. The conductor may be either attached to the outside or the inside of one of the tube walls or it may be imbedded within this wall if moulded therein before the tube is vulcanized. If desired, the tube may be constructed with several conductors arranged in parallel to one another in attachment to or imbedded in a side wall.

Since the metallic portion of the coil tends to wind the same in tight convolutions it will be understood that in order to uncoil the system and to extend the conductor or conductors for use as an antenna it is only necessary to inflate the tube by sufficient air pressure to cause the same to become substantially rigid. If the antenna is to be used as a vertical antenna then means are provided for attaching the outer end of the tube and conductor convolutions to a suitable base carried by the vehicle or other support for the antenna.

An air pump or compressor is preferably employed to inflate the tube so as to uncoil the same and to straighten the conductor. If the dimensions of the tube and conductor are sufficient to warrant, and if the antenna is to be used, say, outside of a chassis so that the occupants of the vehicle are unable to observe the extent to which the antenna is unwound and extended, then a pressure gauge may be applied to the pipe line which must be provided for connecting the pump to the collapsible tube. This pressure gauge may then be calibrated to indicate the extent or length of the conductor which is unwound from the coil. Usually, it would be the case that in operation the antenna will need to be fully extended. Accordingly, the pump will be used to produce sufficient pressure for obtaining this result.

In order to impart sufficient rigidity to the antenna system it may be necessary to compress the air within the collapsible tube considerably more than is sufficient merely to uncoil the convolutions in opposition to the stresses of the elastic conductor. The pressure gauge then serves to indicate what pressure is suitable for obtaining a desired degree of rigidity.

It is also within the scope of my invention to provide an antenna system such as described above but for the purpose of use with any mobile or stationary radio equipment. If the antenna is to be installed on top of an automobile, for example, it may be desirable to mount the air pump in a convenient place for inflating the tube whenever necessary to utilize the antenna and to provide an air valve so as to deflate the tube whenever the automobile is to be driven under a bridge or through a tunnel such as to leave too little clearance for the antenna to remain standing.

The drawing illustrates the idea of the invention sufficiently clear to require little explanation. The elastic conductor A is shown wound parallel to the tubular casing B. The inner end of the convolution is shown hermetically sealed. The outer end is shown with a coupling C having connected thereto a feeder pipe D to which a small pump E is connected. In the coupling C a valve F is provided for deflating the tube whenever it is desired to recoil the same.

I claim:

1. An antenna comprising a conductor of elastic flat wire which in a state of repose tends to form itself into a spiral coil, a collapsible tube surrounding the conductor, and means for inflating the tube thereby to uncoil and straighten the conductor.

2. An antenna system comprising a spirally formed resilient conductor, a collapsed tube wound between the convolutions of said conductor and attached thereto, said tube being hermetically sealed at the inner end of its convolutions, and pneumatic means attached to the outer end of said tube for inflating the same, thereby to uncoil both the tube and the conductor and to render the antenna system relatively straight and rigid.

3. An antenna composed of an elastic self-coiling flat conductor, pneumatic means attached along the length of said conductor for uncoiling the same and holding it erect, and an air pump for inflating said means.

4. A device according to claim 3, and having means including a pressure gauge connected to said pneumatic means for indicating the extent to which said antenna is uncoiled.

5. A radio antenna in combination with a collapsible rubber tube, said antenna comprising a resilient conductor imbedded in one of the walls of said tube, said conductor having internal stresses such that it tends to coil itself and the tube spirally, and pneumatic means for inflating the tube thereby to straighten the antenna.

6. An antenna comprising a self-coiling conductor, pneumatically inflatable means coextensive with said conductor for uncoiling the same, a source of air pressure, means including a valve for admitting air to said inflatable means, thereby to control the extent to which said antenna is uncoiled and paid out, said valve being at times operable to exhaust air from said inflatable means, and a pressure gauge connected to said inflatable means, said gauge being calibrated in terms of the length of antenna paid out.

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