Feb. 21, 1950 A. A. WALSH 2,498,350

SHOCK MOUNT FOR COLLAPSIBLE ANTENNAS

Original Filed April 30, 1943

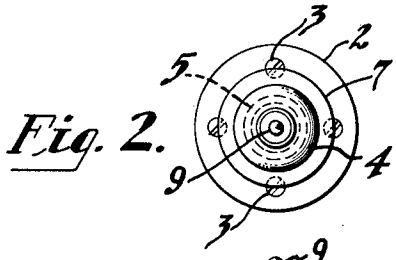


Fig. 2.

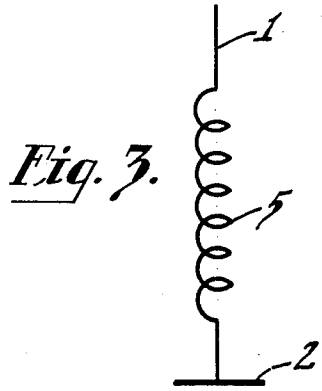


Fig. 3.

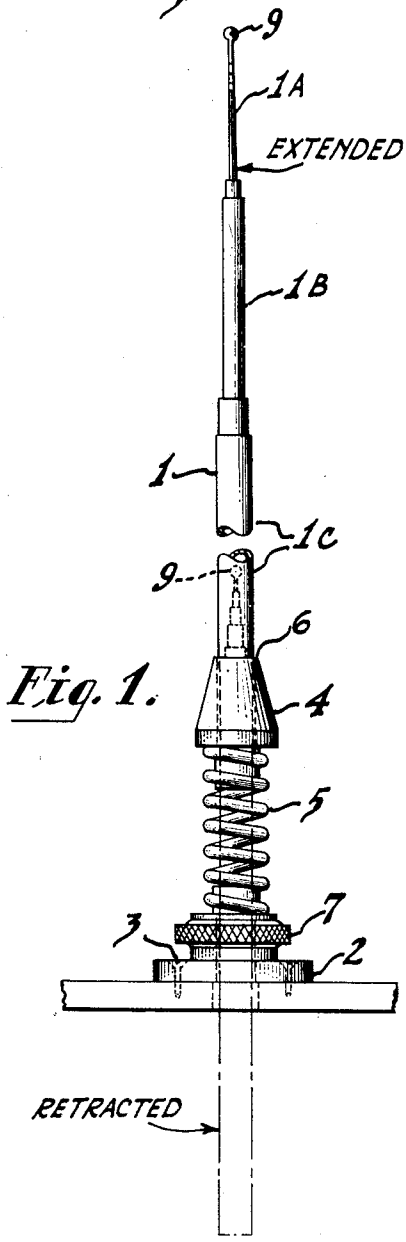


Fig. 1.

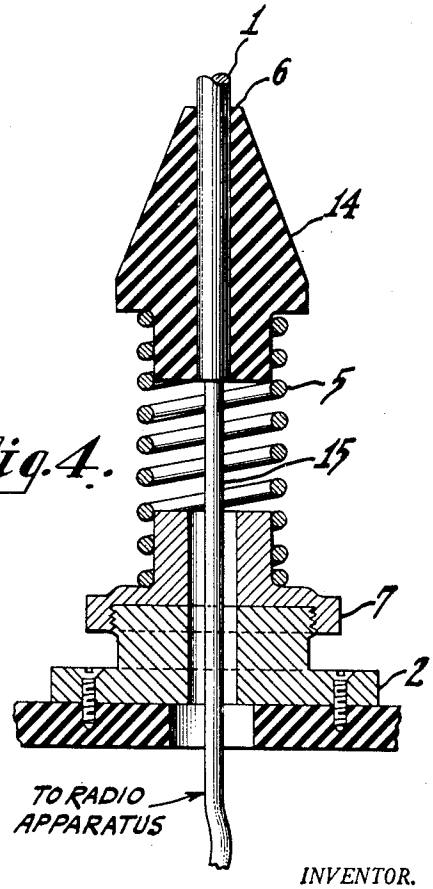


Fig. 4.

INVENTOR.

BY Allen A. Walsh

H. G. Grower

ATTORNEY

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## SHOCK MOUNT FOR COLLAPSIBLE ANTENNAS

Allen A. Walsh, West Englewood, N. J., assignor to Radio Corporation of America, a corporation of Delaware

Original application April 30, 1943, Serial No. 485,122, now Patent No. 2,419,611, dated April 29, 1947. Divided and this application November 7, 1945, Serial No. 627,257

4 Claims. (Cl. 250—33)

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This invention relates to a new and useful shock absorbing antenna mount.

An object of this invention is to provide a simple and efficient flexible mount for an antenna, which mount is particularly adapted for absorbing mechanical shocks and the prevention of mechanical injury.

Another object of this invention is to provide an improved telescoping antenna structure which is made up of component parts, some of which are capable of being employed as additional or series loading inductance in the antenna.

This application is a division of my copending application, Serial No. 485,122, filed April 30, 1943, which issued as U. S. Patent 2,419,611 on April 29, 1947.

A feature of this invention is the arrangement of a mounting plate coupled together with an antenna sleeve by means of a coil spring, the antenna member being arranged to be extended or retracted through the sleeve spring and mounting plate. The antenna mount of this invention makes possible the use of a telescoping antenna, with a resilient spring mount arranged to prevent mechanical injury to the extended portion of the antenna. The antenna mount of this invention is particularly useful with portable radio apparatus, such as transmitters and receivers, wherein it is desirable to have a built-in antenna made of telescoping sections so that it may be adjusted to any desired length and when not in use collapsed into the main assembly. Antennae of this type, as known in the prior art, are usually constructed in several sections of thin wall metal tubing, which are often damaged beyond repair by merely striking some object sufficiently hard to bend a tube section.

This application is a further improvement in antennae of the type shown by a Hathaway Patent 2,161,707, dated June 6, 1939.

This invention will best be understood by referring to the accompanying drawing in which:

Fig. 1 is an elevation of the antenna mounting of this invention,

Fig. 2 is a plan view of Fig. 1,

Fig. 3 is a diagram showing the antenna member connected to form a series loading inductance, and

Fig. 4 is a sectional detail showing a modification of Fig. 1.

Referring now to Figs. 1 and 2 of the drawing, the fundamental portion of the antenna 1 comprises two or more pieces of thin wall metal tubes 1A, 1B and 1C which are arranged to telescope within each other. A base plate 2 is provided with

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suitable apertures 3 for mounting the antenna to the desired apparatus, which may be that of a radio receiving or transmitting set. There is also provided a lower coil support 7 which is secured by suitable means, such as threading or a sliding fit to the mounting plate 2. An antenna sleeve 4 is located slightly above the base plate 2 and is secured thereto by means of an inductive helical coil spring 5 of metal, which is fastened to support 7 and sleeve 4 by any suitable means such as, for example, by welding or soldering. With the antenna 1 extended, the bottom section fits tightly into the swaged tube 6 to make good electrical connection, also so that any mechanical shock is transmitted to the coil spring which will absorb the shock and thus prevent damage to the extended sections. When the antenna is not in use, it may be collapsed as shown in a retracted position as indicated by the dash and dot lines. The top end of tube 1A is terminated with a small metallic ball 9.

As shown by Figs. 3 and 4, the coil spring 5 may be used as a series loading inductance by selecting the number of turns and the diameter of the helix to obtain the required amount of series inductance. When the antenna is used in this manner, the electrical connection is made between the antenna assembly portion above member 7 and the apparatus at the mounting plate 2. If it is desired to use the spring mount without the additonal series inductance, the antenna sleeve 14 should be made of a non-conducting material such as, for example, Bakelite or Isolantite. Other portions of the antenna are insulated to obtain the desired electrical circuit characteristics. Electrical connection is then made by a single flexible conduotor 15 connected to the swaged tube 6 and the apparatus and also through the inside of the coil spring 5.

While I have indicated and described a system for carrying my invention into effect, it will be apparent to one skilled in the art that my invention is by no means limited to the particular mechanism shown and described, but that many modifications may be made without departing from the scope of my invention.

What is claimed is:

1. A shock absorbing antenna mount comprising a relatively rigid metallic antenna member for connection to radio apparatus; a base member having apertures therein; an insulated cone-shaped sleeve member for supporting said antenna member, said sleeve member having a shouldered portion; a spring support member secured to said base member and having a shoul-

dered portion; a helical spring fastened to said sleeve member and said base member at the shouldered portions thereof; a flexible connection lead electrically connected to one end of said antenna member and being arranged to pass through said helical spring member, said spring support member, and one of the apertures in said base member to make electrical connection to said radio apparatus at the other end thereof.

2. A collapsible antenna member comprising a plurality of telescoping metallic tubes to form an antenna for connection to radio apparatus; a cone-shaped sleeve member of insulation material for supporting said telescoping metallic tubes, said sleeve member having a shouldered portion; a flexible connection lead; a threaded coil support member having a shouldered portion; a base mounting plate having threads for coupling to said threaded coil support member; an open spaced coil spring having its ends secured to the shouldered portion of said sleeve member and the shouldered portion of said threaded coil support member; said flexible connection lead being connected to an end of one of said metallic tubes and arranged to pass through said coil spring member, said threaded coil support member, and the base mounting plate to make electrical connection to radio apparatus at the other end thereof.

3. A collapsible antenna arrangement comprising a plurality of telescoping metallic tubes arranged to form an antenna; a sleeve member of insulating material arranged to support said telescoping metallic tubes, said sleeve member having a shouldered portion; a flexible connection lead; a threaded coil spring support having a shouldered portion; a base mounting plate having threads for coupling to said threaded coil support; an open spaced coil spring having its ends secured to the shouldered portion of said sleeve member and the shouldered portion of said



threaded coil spring support; said flexible connection lead being connected to an end of one of said metallic tubes and arranged to pass through said coil spring, said threaded coil spring support, and said base mounting plate to make electrical connection with radio frequency translating apparatus.

4. A shock absorbing antenna arrangement comprising a relatively rigid metallic antenna member; a base member having an aperture therein; an insulated sleeve member for supporting said antenna member, said sleeve member having a shouldered portion; a spring supporting member secured to said base member and having a shouldered portion; a helical spring fastened to said sleeve member and said supporting member at the shouldered portions thereof; and a flexible conductor electrically connected to one end of said antenna member and being arranged to pass through said helical spring member, said spring supporting member and the aperture in said base member for connection to radio apparatus.

ALLEN A. WALSH.


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