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TELESCOPING ROD ANTENNA WITH CENTER MOUNTED LOADING COIL

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FIG. 1 FIG. 2

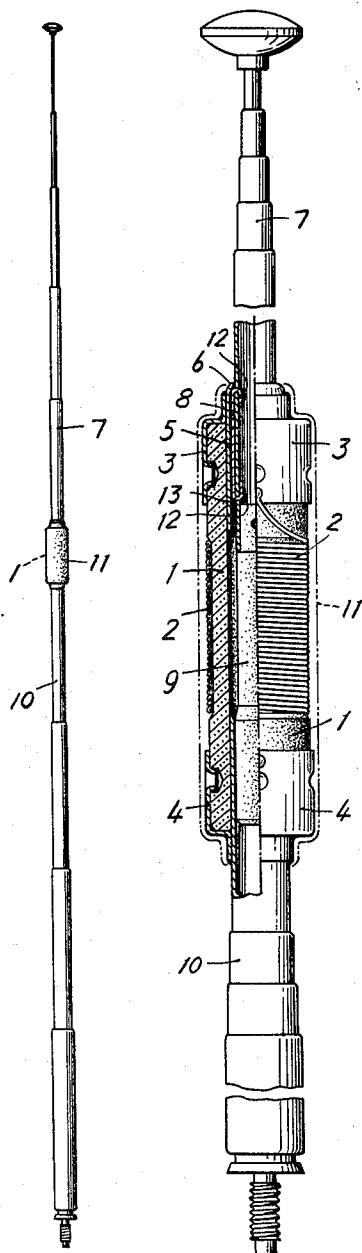


FIG. 3

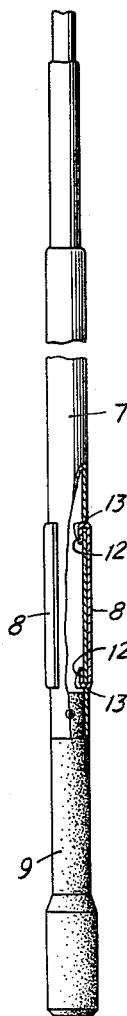
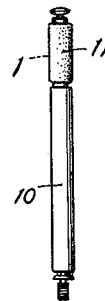


FIG. 4



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TELESCOPING ROD ANTENNA WITH CENTER MOUNTED LOADING COIL

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The present invention relates to a telescopic rod antenna and is more particularly directed to a center loading type of telescopic rod antenna which has at its middle portion a loading coil.

According to the present invention, there is provided a center loading type of rod antenna which comprises a tubular body of insulating material having at its middle portion a loading coil wound therearound externally and having at its both ends upper and lower metallic end caps mounted thereon, said coil being connected at its both ends with said end caps, a conductor tube mounted in the upper end of said tubular body to contact with said upper end cap, an upper telescopic antenna rod fitted slidably in the upper end of said tubular body and having at its lower end a contact piece attached thereto for contacting with said conductor tube, and a lower telescopic antenna rod fitted in the lower end of said tubular body to contact with said lower end cap.

In order that the invention may be clearly understood and readily carried into effect, reference will now be made, by way of example, to the accompanying drawing, wherein:

FIG. 1 is a side view of the antenna stretched,

FIG. 2 is an enlarged side view, partly in section, of the same,

FIG. 3 is a side view, partly in section, of the bottom end portion of the upper antenna rod, and

FIG. 4 is a side view of the antenna contracted.

Referring to the drawing, numeral 1 denotes a tubular body made of insulating material such as Bakelite, and numeral 2 denotes a loading coil wound around the external surface of the middle portion of the tubular body 1 and connected at its both ends with upper and lower metallic end caps as contact members 3 and 4 mounted on the upper and lower ends of the tubular body 1. A conductor tube 5 is mounted in and fixed to the upper end of the tubular body 1 so as to contact with the upper end cap 3 and is curved inwardly at its upper end portion 6. Numeral 7 denotes an upper antenna rod of telescopic type which is inserted slidably in the tubular body 1 from the upper side thereof and has at its lower end at least one contact piece 8 attached thereto so that, when the upper antenna rod 7 is stretched, the contact piece 8 is brought into contact with the conductor tube 5 and, at the same time, strikes against the inwardly curved portion 6 for preventing the antenna rod 7 from being removed. Numeral 9 is a guide tube made of insulating material, and said tube 9 is mounted fixedly at its upper end in the lower end of the antenna rod 7 for facilitating the slide movement of the rod 7 within the tubular body 1. Numeral 10 denotes a lower antenna rod of telescopic type which is mounted in and fixed to the lower end of the tubular body 1 so as to contact with the lower end cap 4 and has its inner diameter large enough to receive therein the guide tube 9. The tubular body 1 is provided integrally on its external surface with a covering layer 11 of vinyl resin or the like. The device illustrated in the drawing has, as clearly shown in FIG. 3, two contact pieces 8, each of which has at its both ends a pair of claws 12 and 12 projecting sideways and is attached to the antenna rod 7 by engaging the claws 12 and 12 with

corresponding slits 13 and 13 made in the side surface of the rod 7.

If, in the case of its use, the upper and lower antenna rods 7 and 10 are stretched, the contact piece 8 of the upper antenna rod 7 is brought into contact with the inner surface of the conductor tube 5 to make an electrical connection of one end of the loading coil 2 and, at the same time, the other end of the coil 2 is connected with the lower antenna rod 10, so that the loading coil 2 is brought into a state where the same is inserted between the upper and lower antenna rods 7 and 10, thus being available as a center loading antenna.

When not used, the upper antenna rod 7 is received in the tubular body 1 and the lower antenna rod 10 by being contracted and, at the same time, the lower antenna rod 10 is also contracted, thus being shortened the whole length.

The rod antenna of the present invention is advantageous in that the electrical contact between the upper antenna rod and the loading coil can be ensured because the upper antenna rod which slides has at its lower end the contact piece, and the loading coil can be facilitated in its adjustment of inductance and its coiling operation and be increased in its mechanical strength against vibration because the same is provided externally. Additionally, the same can be minified in size because the interior of the tubular body is utilizable for receiving therein the upper antenna rod. Furthermore, the same is simple in construction easy to handle and economical in manufacture.

What I claim is:

1. A center loading type telescopic rod antenna comprising, in combination, an upright tubular body of insulating material; a pair of electrical contact members respectively mounted on opposite ends of said tubular body; a loading coil wound about the outer surface of said tubular body between said contact members and electrically connected at opposite ends thereof to said contact members, respectively; a lower telescopic antenna rod having an upper tubular member extending with its upper end into the lower end of said tubular body fixedly connected thereto and in contact with the contact members mounted at said lower end; a conductor tube fitted in the upper end of said tubular body fixed thereto and in contact with the contact member mounted at said upper end; and an upper telescopic antenna rod having a lower member slidably mounted in said conductor tube and carrying at least one contact piece attached thereto contacting said conductor tube, said lower member including the contact piece having a cross section smaller than that defined by the inner surface of said upper tubular member of said lower telescopic antenna rod so that said upper telescopic antenna rod may be moved between an extended position in which the lower end of said lower member thereof is located in said conductor tube with the contact piece engaging the inner surface thereof while the remainder of said upper telescopic antenna rod projects upwardly from said tubular body, and a collapsed position in which said lower member of said upper telescopic antenna rod extends through said tubular body and into said upper member of said lower telescopic antenna rod.

2. A center loading type telescopic rod antenna comprising, in combination, an upright tubular body of insulating material; a pair of conductive end caps respectively mounted on opposite ends of said tubular body; a loading coil wound about the outer surface of said tubular body between said end caps and electrically connected at opposite ends thereof to said end caps, respectively; a lower telescopic antenna rod having an upper tubular member extending with its upper end into the lower end of said tubular body fixedly connected thereto

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and in contact with the end cap mounted at said lower end; a conductor tube fitted in the upper end of said tubular body fixed thereto and in contact with the end cap mounted at said upper end; an upper telescoping antenna rod having a lower member slidably mounted in said conductor tube and carrying at least one contact piece attached thereto contacting said conductor tube, said lower member including the contact piece having a cross section smaller than that defined by the inner surface of said upper tubular member of said lower telescoping antenna rod so that said upper telescoping antenna rod may be moved between an extended position in which the lower end of said lower member thereof is located in said conductor tube with the contact piece engaging the inner surface thereof while the remainder of said upper telescoping antenna rod projects upwardly from said tubular body, and a collapsed position in which said lower member of said upper telescoping antenna rod extends through said tubular body and into said upper member of said lower telescoping antenna rod; and a guide member of insulating material coaxially fixed to the lower end of said lower member of said upper telescopic antenna rod and having a lower portion located, when said upper telescopic antenna rod is in the extended position thereof, in the upper end of said upper member of said lower telescopic antenna rod in sliding engagement with the inner surface thereof for guiding said lower member of said upper telescoping antenna rod during the movement thereof from said extended to said collapsed position.

3. A center loading type telescoping rod antenna comprising, in combination, an upright tubular body of insulating material; a pair of conductive end caps respectively mounted on opposite ends of said tubular body; a loading coil wound about the outer surface of said tubular body between said end caps and electrically connected at opposite ends thereof to said end caps, respectively; a lower telescoping antenna rod having an upper tubular member extending with its upper end into the lower end of said tubular body fixedly connected thereto and in contact with the end cap mounted at said lower end; a conductor tube fitted in the upper end of said tubular body fixed thereto and in contact with the end cap mounted at said upper end; an upper telescoping antenna rod having a lower member slidably mounted in said conductor

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tube and carrying at least one contact piece attached thereto contacting said conductor tube, said lower member including the contact piece having a cross section smaller than that defined by the inner surface of said upper tubular member of said lower telescoping antenna rod so that said upper telescoping antenna rod may be moved between an extended position in which the lower end of said lower member thereof is located in said conductor tube with the contact piece engaging the inner surface thereof while the remainder of said upper telescoping antenna rod projects upwardly from said tubular body, and a collapsed position in which said lower member of said upper telescoping antenna rod extends through said tubular body and into said upper member of said lower telescoping antenna rod; a guide member of insulating material coaxially fixed to the lower end of said lower member of said upper telescopic antenna rod and having a lower portion located, when said upper telescopic antenna rod is in the extended position thereof, in the upper end of said upper member of said lower telescopic antenna rod in sliding engagement with the inner surface thereof for guiding said lower member of said upper telescoping antenna rod during the movement thereof from said extended to said collapsed position; and a layer of insulating material surrounding said loading coil and said end caps.

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