

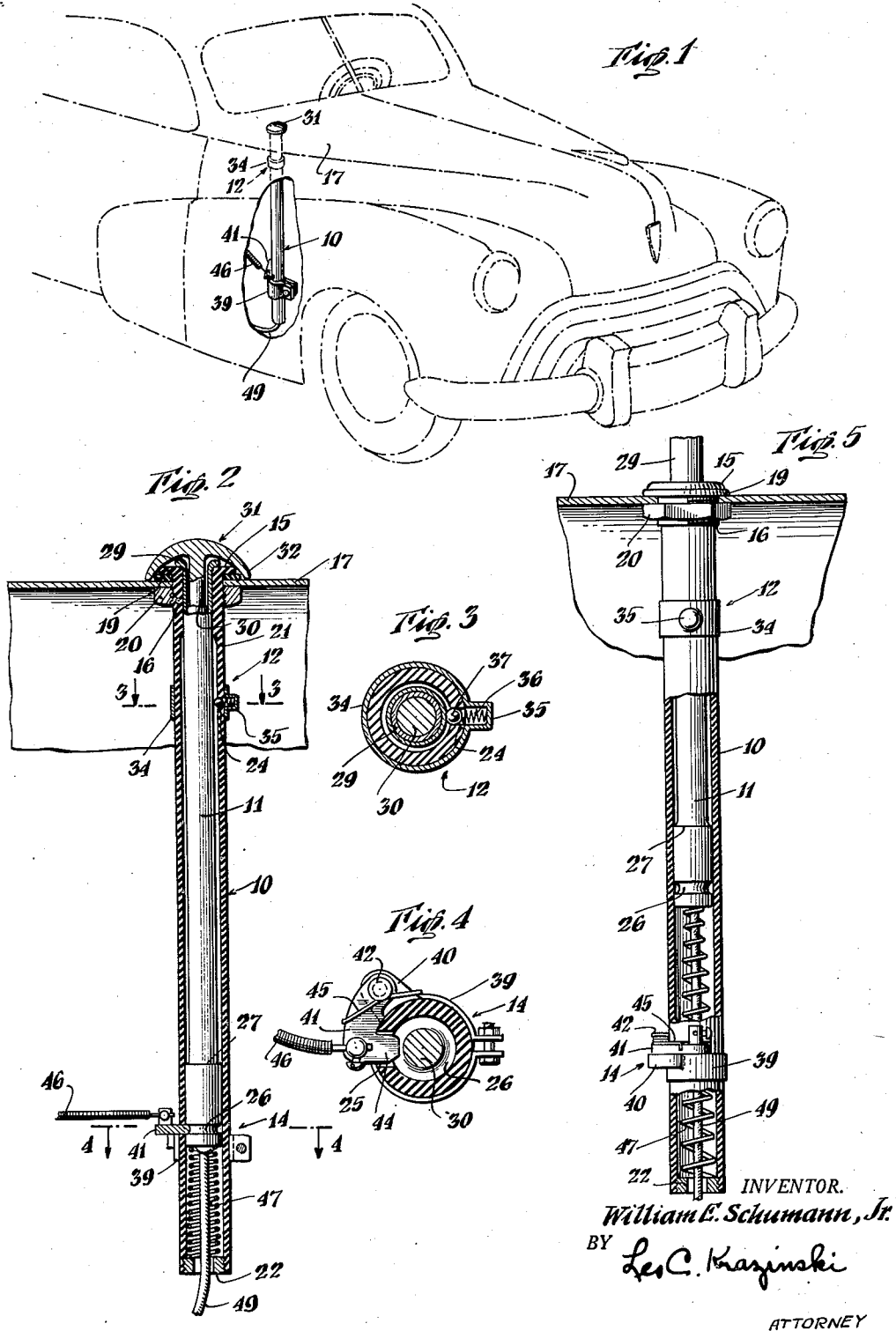
Jan. 23, 1951

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2,538,885

RETRACTABLE ANTENNA

Filed Jan. 6, 1950



UNITED STATES PATENT OFFICE

2,538,885

RETRACTABLE ANTENNA

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Application January 6, 1950, Serial No. 137,197

2 Claims. (Cl. 250—33)

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The present invention relates to radio antennas, and, more particularly, to antennas of the extendable and retractable type adapted for use in connection with craft or vehicles, such as automobiles, power boats, and the like.

Heretofore various forms of antennas of the foregoing type have been proposed or used in practice, but have not been found satisfactory because they could be, while in an extended condition, damaged by unauthorized persons. This has frequently occurred when automobiles were parked on the street, and mischievous or malicious persons could not resist the temptation to bend the antenna out of shape. Another difficulty has been that the antenna was not properly shielded and protected against inclement weather when in its retracted position; whereby parts thereof corroded or became impaired, thus rendering the antenna inoperative for movement from one position to another.

Accordingly, an object of the present invention is to provide an improved antenna arrangement of the foregoing type which is not subject to the foregoing difficulties and disadvantages.

Another object is to provide such an antenna which is simple and compact in construction and can be manufactured in an economical manner.

Another object is to provide such an antenna, which is rugged in construction, reliable in operation, and is protected against inclement weather when in its retracted position.

Another object is to provide such an antenna which is adapted to be locked against unauthorized extraction from the exterior of the craft or vehicle.

A further object is to provide such an antenna which is constructed and arranged for controlling extension and retraction thereof from the interior of the craft or vehicle.

Other and further objects will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In accordance with the invention, the foregoing objects are accomplished by providing an antenna which comprises a tubular casing, an antenna member slidably disposed in the casing, and means for locking the antenna member in a concealed position in the casing. The casing is adapted to be mounted within the craft or vehicle with the upper end of the casing extending through an opening in the body thereof, whereby the locking means are inaccessible from the exterior and are controllable solely from the interior. In a preferred embodiment of the invention, about to be described, the antenna member is also adapted to be releasably locked in an

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extended position, is adapted to be extended by spring means and to be retracted from the interior; and the antenna member carries an element at its upper end which cooperates with the casing to protect the parts within the casing when the antenna is retracted.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein:

Fig. 1 is a fragmentary perspective view of an automobile, with a portion thereof broken away to illustrate the installation of an antenna in accordance with the invention.

Fig. 2 is an enlarged longitudinal, sectional view of the antenna shown in Figure 1 with the parts thereof illustrated in retracted position.

Fig. 3 is a sectional view taken along the line 3—3 on Fig. 2, illustrating a device for locking the antenna member in extended position.

Fig. 4 is a sectional view taken along the line 4—4 on Fig. 2, illustrating a device for locking the antenna in retracted position.

Fig. 5 is a view of the casing partly in elevation and partly in section, illustrating the antenna member while being moved into an extended position.

Referring to the drawing in detail, and more particularly to Figure 1 thereof, there is shown, by way of example, an automobile having a radio antenna structure mounted within the rearward portion of the hood compartment or under the cowl with its upper end extending through an opening at the top of the hood or cowl. It will be understood that the antenna structure could be similarly mounted on the top of the cabin or pilot house of a power boat or other craft or vehicle.

As illustrated in Figs. 2, 3, and 4, the antenna structure generally comprises a tubular casing 10, an antenna member 11 slidably disposed in the casing, a device 12 for locking the antenna member in extended position (Figure 3), and a device 14 for locking the antenna member in retracted position (Figure 4).

The casing 10 is formed of dielectric or insulating material and has an outwardly extending flange 15 at its upper end and an exteriorly threaded section 16 adjacent the flange. The casing, as shown in Fig. 2, extends downwardly through the opening in the top 17 of the hood or cowl or the like with the flange extending outwardly beyond the opening to support the casing. A gasket or washer 19 of sealing material is positioned between the flange and the top 17 and a nut 20 is applied to the threaded section 16 of the casing to secure the latter to the top.

The interior of the casing 10 has a downwardly facing shoulder 21 adjacent its upper end and has

a ring 22 threaded into its lower end to provide a shoulder. The side wall of the casing has an aperture 24 below the shoulder 21 and has a slot 25 above the ring 22, the purposes of which will become apparent hereinafter.

The antenna member 11 is formed with an annular groove or recess 26 adjacent its lower end and an upwardly facing shoulder 27 above the recess, which shoulder is adapted to cooperate with the shoulder 21 of the casing to limit the upward movement of the antenna member and to determine the extended position thereof. The antenna member may be in the form of a tube, as shown, having one or more telescopically arranged antenna members 29 and 33 slidably mounted thereon, the innermost member which provides the tip of the antenna having a mushroom-head shaped member 31 or the like thereon. This last-mentioned member has a depending skirt 32 constructed and arranged to extend over and about the upper end of the casing when the antenna is in concealed position, as shown in Fig. 2, whereby the casing and antenna are protected against inclement weather, sea spray (when used on water craft) and the like, to prevent corrosion of the internal parts. In case a single antenna member is utilized, as may be desirable in certain applications of the apparatus in accordance with the invention, the member 31 may be connected directly instead of indirectly to the antenna member 11.

The locking device 12 (Figs. 2 and 3) comprises an annular member 34 positioned about the casing after the same is secured to the hood top 17 which has a radially extending cup 35 facing the aperture 24 of the casing, a spring 36 in the cup, and a detent element, such as a ball 37, seated in the aperture 24 and adapted to be urged by the spring into the recess 26, when the antenna member is extended to lock the same in extended position.

The locking device 14 (Figs. 2 and 4) comprises a ring 39 clamped about the casing after the same is secured to the hood top 17, which ring has a lug or ear 40 thereon and a detent element, such as an arm 41, pivotally mounted on the ear 40, as seen at 42. The arm 41 has a projection 44 adapted to extend through the slot 25 and into the recess 26 of the antenna when the antenna member 11 is in its retracted position, as shown. A spring 45 is shown urging the projection 44 into the aforementioned position to positively lock the antenna member 11 against extraction.

The arm 41 is adapted to be rocked about its pivot in opposition to the spring 45 by a pull cable 46 operable from the interior of the craft or vehicle to cause the antenna member 11 to be released when it is desired to extend the same.

While no provision is made in the apparatus, as shown, for positively locking the antenna members 29 and 33 in retracted position, it will be appreciated that the antenna members 11 and 29 could be formed with radially aligned slots and the antenna member 30 could be formed with an annular groove adapted to be engaged by the locking projection 44.

The antenna member 11 may be extended partially or entirely (Fig. 5) when released upon operation of the cable 46 by mechanical means, such as a compression spring 47 having its lower end supported on the shoulder provided by the ring 22 and having its upper end engaging the lower end of the antenna member 11.

A lead-in wire 49 is connected to the lower end of the antenna member 11 which may be

constructed to serve as a cable for retracting this antenna member by pulling the same from the interior of the craft or vehicle.

If desired, the lower end of the casing 10 may be secured or otherwise connected to the craft or vehicle in which it is mounted to add rigidity to its support.

From the foregoing description, it will be seen that the present invention provides an improved antenna structure for craft or vehicles which prohibits extraction by unauthorized persons or tampering therewith in any manner which may result in damage thereto. The device is simple and practical in construction, is reliable in operation, is easily installed and is economically manufactured.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matters are to be interpreted as illustrative and not in any limiting sense.

What is claimed is:

1. A radio antenna for craft or vehicles comprising a tubular casing, an antenna member slidably disposed in said casing and having a recess adjacent its lower end, spring urged detent means movably mounted on said casing adjacent its lower end adapted to extend into said recess to lock said member in a concealed position in said casing, means for operating said detent means from within the craft or vehicle to release said member, a spring for urging said member into an outwardly extending position upon release of said member, and a spring urged detent member mounted on said casing adjacent its upper end adapted to extend into said recess to lock said slidable member in an outwardly extended position.

2. A radio antenna for craft or vehicles comprising a substantially upright tubular casing formed of dielectric material adapted for securement to the wall of the craft or vehicle at its upper end to mount said casing within the craft or vehicle, an antenna member slidably disposed in said casing and having a recess adjacent its lower end, spring urged detent means movably mounted on said casing adjacent its lower end adapted to extend into said recess to lock said member in a concealed position in said casing, means for operating said detent means from within the craft or vehicle to release said member, a spring for urging said member into an outwardly extending position upon release of said member, a spring urged detent member mounted on said casing adjacent its upper end adapted to extend into said recess to lock said slidable member in an outwardly extended position, and a member connected to the upper end of said slidable member having a depending skirt constructed and arranged to extend over and about the upper end of said casing when said slidable member is in a concealed position.

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