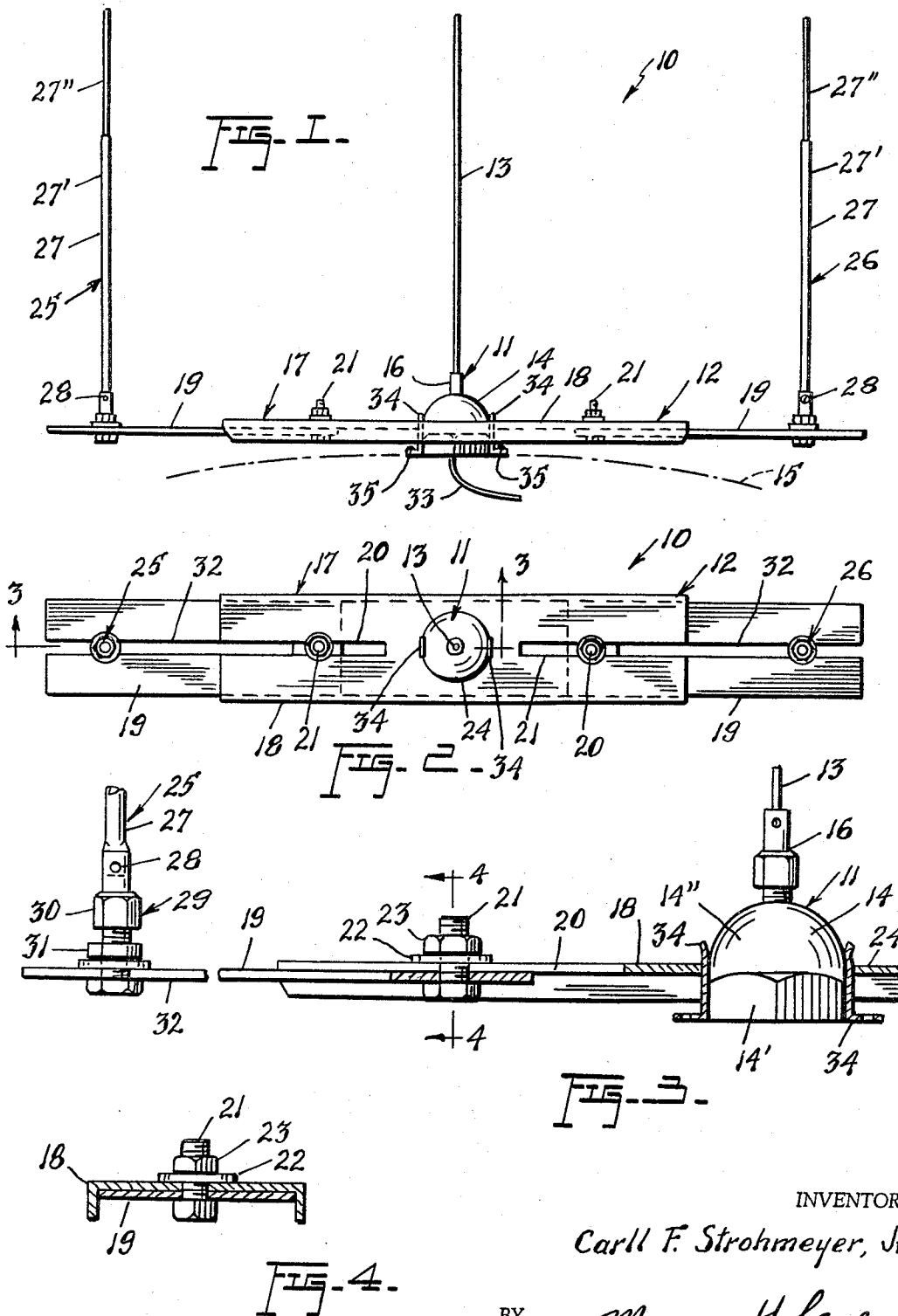


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 ROTATABLE DIRECTIONAL ANTENNA ATTACHMENT
 FOR USE WITH A VERTICAL ANTENNA ROD
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1

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ABSTRACT OF THE DISCLOSURE

A directional antenna attachment for use with an installed vertical active antenna rod having an insulation mounting member at its lower end comprising a horizontally elongated metallic base provided intermediate its ends with an aperture for rotatable positioning of said base on the stated mounting member, a director antenna and a reflector antenna rod carried by opposite end portions of the base, and means adjustably mounting the director and reflector antenna rods on the base for movement thereof toward and away from the aperture. The base comprises a plurality of slidably connected and longitudinally extensible and retracted base portions. Both the director and reflector antenna rods include a plurality of slidably telescoped extensible and retractable rod sections.

This invention relates to new and useful improvements in directional antennas used for radio or similar purposes, and in particular the invention concerns itself with a directional antenna embodying a vertical active antenna rod together with director and reflector antenna rods carried by a horizontally elongated base at opposite sides of the active rod, the base being rotatable in a horizontal plane to permit the antenna to be oriented in a desired direction for optimum transmission and/or reception of signals.

The principal object of the invention is to provide a directional antenna of this type which is very simple in construction, highly efficient in operation, which may be quickly and easily adjusted as to positional relationship between the director and reflector rods and the active rod, and which may be conveniently folded or collapsed into a compact form when it is not in use.

While the directional antenna of the invention has general utility, it is especially adapted for use in the environment of mobile antennas such as are commonly carried by automobiles or other vehicles. In such an environment, a conventional single active antenna already provided on the vehicle may be readily converted into a directional antenna by simply applying the director and reflector rods of the invention with their carrying base to the conventional active antenna to obtain the desired directional transmission and/or reception of signals.

Other objects and advantages of the invention will become apparent from the following description taken in conjunction with the accompanying drawings, wherein like characters of reference are used to designate like parts, and wherein:

FIGURE 1 is a side elevational view of the directional antenna of the invention;

FIGURE 2 is a top plan view thereof;

FIGURE 3 is an enlarged, fragmentary sectional view, taken substantially in the plane of the line 3—3 in FIGURE 2; and

FIGURE 4 is a cross-sectional view, taken substantially in the plane of the line 4—4 in FIGURE 3.

Referring now to the accompanying drawings in detail, the directional antenna in accordance with the invention is designated generally by the reference numeral 10 and embodies in its construction a conventional active anten-

2

na 11 and what may be referred to as a directional antenna attachment 12. The active antenna 11 is of the usual type including a vertical rod 13 provided at its lower end with a mounting member 14 of insulating material, the member 14 being suitably secured to supporting structure, as for example, to the top of a vehicle indicated by the dotted lines 15. The mounting member 14 includes the usual hexagonal bottom portion 14' and a substantially semi-spherical upper portion 14'' (see FIG. 3), the upper portion 14'' being equipped with a metallic socket 16 in which the lower end of the rod 13 is secured.

The directional antenna attachment 12 of the invention comprises a metallic, horizontally elongated base 17, including an inverted channel-shaped center portion 18 and a pair of strap-like end portions 19 which are slidably telescoped in the ends of the center portion, as will be clearly apparent from FIGS. 3 and 4. The ends of the center portion 18 are provided with longitudinal, open-ended slots 20 to adjustably receive bolts 21 carried by the inner ends of the end portions 19, so that by sliding the portions 18, 19 of the base together or apart, the overall length of the base may be varied. Suitable washers 22 and nuts 23 are provided on the bolts 21 for locking the base portions in a desired adjusted position.

The base center portion 18 is provided with a central opening or aperture 24 for rotatable reception of the upper portion 14'' of the aforementioned mounting member 14, whereby the entire base 17 may be manually rotated about the member 14 in a horizontal plane, it being noted that the base projects diametrically to opposite directions from the member 14, as shown.

The respective end portions 19 of the base 17 carry a director antenna rod 25 and a reflector antenna rod 26 which are identical in construction and each comprises a rod member 27 pivotally secured at its lower end as at 28 to a fastener 29, the latter including a socket 30 similar to the aforementioned socket 16 and a bolt, nut and washer assembly 31 for fastening the socket 30 to the associated end portion 19 of the base 17.

The base end portions 19 are provided with longitudinal, open-ended slots 32 which adjustably receive the bolt assemblies 31 so that the director antenna 25 and the reflector antenna 26 may be moved toward or away from the active antenna 11 as desired. The slots 32 in the base end portions 19 are aligned with the slots 20 in the base center portion 18, as will be apparent from FIG. 2.

Each rod member 27 of the antennas 25, 26 preferably consists of two or more slidably telescoped, extensible and retractable rod sections 27', 27'', to that the length of the antennas 25, 26 may be adjusted. Also, while these antennas are normally vertical and are held so by tightening of the pivot means 28, the pivot means 28 may be loosened to permit the antennas 25, 26 to be moved to a folded, inoperative position on top of the base 17 to facilitate collapsing of the device into a compact form, when it is not in use.

In use, the antennas 11, 25, 26 are longitudinally aligned in a common vertical plane extending diametrically of the mounting member 14, so that by simply rotating the base 17 about the member 14, the entire antenna device may be oriented in any direction for optimum transmission and/or reception of signals. The center portion 18 of the base 17 is simply seated on the hexagonal bottom portion 14' of the member 14 so that it rotatably encompasses the member portion 14'', with some clearance existing between the base 17 and the vehicle top 15.

The active antenna rod 13 is electrically connected by a suitable conductor 33 to the transmitter and/or receiver (not shown), and a ground connection is provided for the base 17 and, consequently for the antennas 25, 26. This ground connection consists of a pair of metal brushes 34 which are preferably flexibly resilient and are suitably

secured, as at 35, to the vehicle top 15 at opposite sides of the mounting member 14. The brushes 34 extend into the aperture 24 in the base portion 17 and electrically engage the base at the edge of the aperture to effect the desired ground.

While in the foregoing there has been described and shown the preferred embodiment of the invention, various modifications and equivalents may become apparent to those skilled in the art to which the invention relates. Accordingly, it is not desired to limit the invention to this disclosure and various modifications and equivalents may be resorted to, falling within the spirit and scope of the invention as claimed.

What is claimed as new is:

1. An adjustable directional antenna comprising in combination, a support surface, a mounting member of insulating material installed on top of said support surface, a vertical active antenna rod projecting upwardly from said mounting member, a horizontally elongated base rotatably positioned on said mounting member and extending to diametrically opposite sides therefrom, a director antenna rod and a reflector antenna rod carried by opposite end portions of said base, and means adjustably mounting said director and reflector antenna rods on the base for movement thereof toward and away from said active antenna rod said mounting member including a top portion having a circular cross sectional configuration in a transverse base plane therethrough, a pair of upright resilient metal members secured to said support surface adjacent to said mounting member at opposite ends of a diametric line through said mounting member; said base including a center portion having a centrally located circular aperture therein rotatably and detachably receiving said mount-

ing member, said aperture being of sufficient diameter to clear said upper portion of said mounting means, but small enough so that the edge of said aperture is frictionally engaged by said metal members, a pair of end portions carrying said director and reflector antenna rods respectively, and adjustable means securing said end portions to said center portion whereby the over all length of said base may be varied.

2. The device as defined in claim 1 wherein each of said director and reflector antenna rods includes a fastener mounted on an end portion of said base, and a rod member adjustably secured to said fastener and projecting upwardly therefrom, said rod member being movable to a folded position overlying and substantially parallel to said base.

3. The device as defined in claim 1 wherein each of said director and reflector antenna rods includes a rod member comprising a plurality of slidably telescoped extensible and retractable rod sections.

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