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PORTABLE ANTENNA MOUNTING

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Fig:3.

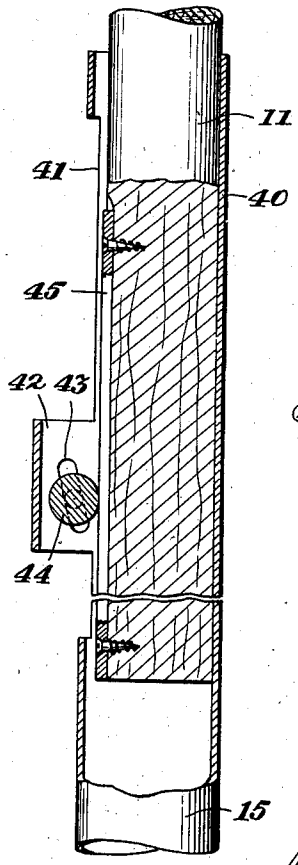


Fig:2.

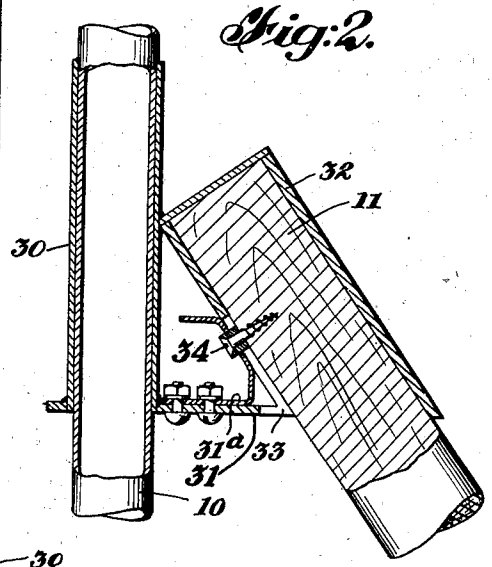


Fig:1.

Fig:4.

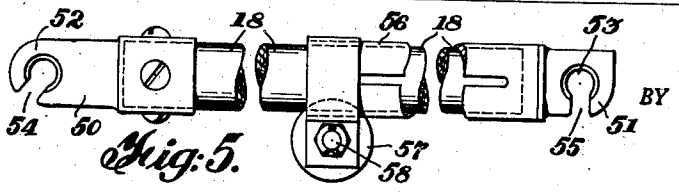


Fig:5.

INVENTORS
AVERY G. RICHARDSON
CASPER S. BEDNASH

BY

ATTORNEY

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PORTABLE ANTENNA MOUNTING

Avery G. Richardson, Boonton, and Casper S. Bednash, Jersey City, N. J., assignors to Federal Telephone and Radio Corporation, Newark, N. J., a corporation of Delaware

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This invention relates to portable antenna mountings, and more particularly to tripod supports for vertical antenna arrangements.

In field operation such as is commonly encountered with mobile Army units, it is often desirable to have antenna arrangements which may be quickly set up in a field and easily aligned. Such structures should be as simple as possible and should avoid use of loose parts as much as possible to minimize danger of losing some of the pieces. Furthermore, in order that accuracy of indications may be assured, the units should be as rigid as possible and should be so constructed that it may be easily adjusted to line up several antenna units with one another.

It is a principal object of our invention to provide a portable antenna support which is simple in construction and relatively rigid.

It is a further object of our invention to provide a portable antenna which may be quickly set up in the field and easily adjusted as to alignment.

It is a still further object of our invention to provide a portable antenna arrangement in which the legs supporting the structure may be easily adjusted in length.

In accordance with our invention, we provide a tripod antenna support adapted to carry a rod-shaped antenna. The structure includes three legs held together at one end to provide a pyramid shaped tripod and at their other ends provided with sharp-footed adjustable members with which the supporting rods may be easily adjusted in length. Intermediate the upper and lower ends of the tripod legs are provided antenna supporting rods which preferably extend horizontally from these intermediate points to a central point directly below the apex of the pyramid defined by the legs. At this center point is provided an antenna carrying member which supports the weight of the antenna, the other end of which extends upwardly through an opening in the member fastened to the upper ends of the legs. The antenna supporting rods may be made adjustable in length so that the antenna support may be shifted with respect to the apex of the pyramid for adjustment of alignment of the antenna.

A better understanding of our invention may be had from the particular description thereof made with reference to the accompanying drawings, in which:

Fig. 1 is a front elevational veiw of a tripod antenna embodying the features of our invention;

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Fig. 2 is a sectional view taken between the lines 2—2 of Fig. 1 illustrating a construction for the tripod support;

Fig. 3 is a sectional view taken along the lower portion of one of the legs 11 shown in Fig. 1 to illustrate the adjustable leg arrangement;

Fig. 4 is an enlarged view of an antenna bracket arrangement used for supporting antenna support rods shown in Fig. 1; and

Fig. 5 is an enlarged illustration of a form of antenna support rod which may be used in accordance with our invention.

Turning first to Fig. 1, 10 represents a vertical rod antenna which may be of the telescoping type in order that it may be tuned to different wavelengths. Three leg rods 11, 12 and 13 are provided and assembled in the form of a pyramid fastened together at the apex by antenna retaining means 14. Most of rod 13 is obscured in Fig. 1 by antenna 10. At the feet of each of rods 11, 12 and 13 are provided adjustable foot portions 15, 16 and 17 which may be used to secure proper footing and adjustment of the antenna. At a point intermediate the ends of rods 11, 12 and 13 are provided three antenna support rods; one attached to each leg 11, 12 and 13 at one end. Only support rods 18 and 19, attached to legs 11 and 12, respectively, appear in Fig. 1; the support rod attached at one end to leg 13 is not visible. These antenna support rods 18, 19 are detachably fastened at one end by brackets like 20, 21 to the rods 11, 12 and 13, and at their other ends are detachably fastened in brackets 22 and 23 mounted on antenna supporting plate 24. The third rod (not shown) is fastened by similar brackets to leg 13 and plate 24. The lower end of antenna 10 is positioned in plate 24 by suitable means such as collar 25 and extends through plate 24 and through an opening in antenna retaining means 14. Rods 18, 19 and the third rod (not shown) form a spider and are made adjustable in length so that the antenna support plate 24 may be adjusted relative to the apex of the pyramid formed by the three legs 11, 12 and 13 to adjust the alignment of antenna 10 vertically. Rods 18, 19, and the third rod (not shown), together with the portions of the legs 11, 12 and 13 below the brackets like 20 serve to carry the antenna weight. The upper ends of leg rods 11, 12 and 13 serve to brace antenna 10 against lateral movement caused by winds and the like.

The upper ends of each of the legs 11, 12 and 13 are detachably retained in position at antenna retaining means 14 by the arrangement shown more clearly in Fig. 2. In this arrangement

elements 14 comprises a tubular sleeve portion 30 having the inner diameter substantially equal to the outer diameter of antenna 10. At the lower end of tube 30 is provided a flange 31 to which are fixed three cap members 32 equally spaced around the circumference of plate 31 and preferably welded at one end to sleeve 30. These portions 32 are adjusted at a fixed angle with respect to plate 31 so that upon assembling the antenna the tripod legs will always assume a definite fixed angle. On the inner side of member 32 is provided a slot 33 and on leg 11 is provided a projecting pin or screw 34 adapted to slide in slot 33 to assure proper alignment of leg 11 so that the bracket 20 will be supported inside of the figure defined by the three tripod legs. Ears like 31*a* fastened to and projecting upward from flange 31 act as stops for screws like 34 to prevent displacement of the legs while in assembled condition.

At the lower end of each of the legs 11, 12 and 13 is provided the adjustable arrangement 15, 16 and 17. The lower end of each of these adjustable foot members 15, 16 and 17 is made into a point or flattened edge as shown. The remaining details of construction are more clearly seen by reference to Fig. 3. In this arrangement it can be seen that element 15 comprises a hollow tubular portion 40 having an inner diameter substantially equal to the diameter of leg 11. On the upper side of sleeve 40 is a slot 41 which extends downwardly to a point near the lower end of foot portion 15. Across both sides of slot 41 ears project from sleeve 40 and form bracket member 42. Preferably, this member 42 is a unitary U-shaped structure. In each wall of bracket 42 is provided a cam slot 43 having a definite fixed angle with respect to the sleeve 40. A locking wheel 44 is mounted between the ears forming bracket member 42 with its shaft in slots 43. This wheel is preferably roughened or knurled on the outer periphery. On one side of leg 11 is provided a locking plate 45 which may be of a soft metal or may be of some hardened material similar to brake linings.

Instead of providing a separate locking plate the locking wheel may bear against the material of the pole itself in which case, if desired, a ridge may be provided to position the sleeve thereon. Plate 45 is in the form of a strip of just sufficient width to fit in slot 41 so that sleeve 40 will always be positioned in the proper relation to leg 11 when the parts are assembled. As leg 11 is forced downwardly into sleeve 41, locking wheel 44 is fixed to roll downwardly in cam slot 43 tightly wedging locking wheel 44 against locking plate 45. Should it be desired to adjust the length of leg 11, wheel 44 may be readily loosened merely by holding sleeve 40 and forcing leg 11 to move in an opposite direction away from the sleeve 40, thus forcing wheel 44 upwardly in slot 43. Wheel 44 may then be positioned manually downward so as to contact the braking strip 45 locking in place against leg 11. Since wheel 44 is always retained in position, there is no danger of losing the part and it is always available when it is desired to set up the antenna.

The construction of antenna support rods 18, 19 and brackets 20, 21 may more readily be seen by reference to Figs. 4 and 5. Support rod 18, for example, has fastened on each end, attaching hooks 50, 51 provided with circular openings 52, 53 and narrower slots 54, 55. Bracket 20 may consist of a base plate element 60 having

two upstanding bracket portions 61, 62 preferably flared at the upper ends for easy centering of supporting hook 50. Locking pin 63 is fixed through holes in brackets 61, 62 and a portion 64 of the locking pin 63 outside of the flared portions of the brackets 61 and 62 is flattened or reduced in diameter so that it will readily permit passage through slot 54. A spring 65 is provided normally to retain the pin 63 in the position shown in the drawing. In setting up the antenna hook 50 may be inserted between the flared portions of brackets 61 and 62 and pin 63 pushed to the left to bring the narrow portion opposite slot 54. Hook 50 then drops into place and pin 63 is permitted to return to its original position. As rod 18 is then lifted to the horizontal, the slot 54 which is at an angle, as shown, no longer is in a position to pass flattened portion 64 of the pin so that there is no danger of it becoming accidently dislodged. At the other end of the rod the bracket 22 may be of a similar construction to that shown in Fig. 4. However, in this case, the rod 18 is not turned after being put into place so that slot 55 must be made vertical. However, the inner portion of hook 53 is made flattened so that the element will be readily held in place by a slot not shown in bracket 22 even should some movement of parts be necessary to position the opening 55 at the holding pin.

In order to provide adjustment in length for rods like 18, one end thereof, preferably the end near antenna supporting means 24 may be provided within a hollow slotted sleeve 56 as shown in Fig. 5 and may be held in adjusted position once the antenna support 24 is suitably locked by means of a bolt 58 tightened by rotation of knurl wheel 57.

It should be clear that while we have illustrated as a particular example a preferred embodiment of our invention, many alterations and changes therein may be made without departing from the scope of our invention as set forth in the objects of the invention and defined in the accompanying claims.

What is claimed is:

1. A tripod antenna support for antenna rod comprising three leg rods, means for retaining said antenna rod and the three leg rods in juxtaposition with each other including means for readily detachably and fixedly mounting said leg rods at one of their ends on said retaining means to outline a pyramid with its apex at the top, said retaining means being provided with an opening to accommodate said antenna rod, the other ends of said leg rods being supported from the ground, antenna mounting means adapted to be supported above the surface of the ground below said apex, a separate support rod readily detachably fastened at one end to an intermediate point of each one of said leg rods, means for readily detachably fastening the other ends of said support rods to said antenna mounting means, said support rods being of such length as to extend in a substantially horizontal plane to a point beneath said apex, and adjustable means at the lower end of each of said leg rods comprising a hollow metal sleeve formed with a sharp ground-piercing end, and permanently attached roller cam means and said sleeve cooperating with said leg to adjustably retain the end of said leg in a desired position within said sleeve.

2. A tripod support according to claim 1, further comprising means for adjusting the length

of said support rods to adjust the position of said antenna mounting means.

3. A portable antenna support structure comprising three leg rods, means for retaining an antenna rod and the three leg rods in juxtaposition with each other, means for detachably and fixedly mounting said rods at one end to outline a pyramid with its apex at the top, said retaining means being provided with an opening to accommodate an antenna rod, the other ends of said rods being supported from the ground, antenna mounting means adapted to be supported above the surface of the ground below said apex, a separate rod detachably fastened at one end to an intermediate point of each one of said leg rods, means for detachably fastening the other ends of said support rods to said antenna mounting means, said support rods being of such length as to extend in a substantially horizontal plane to a point beneath said apex, and means for adjusting the length of said support rods to adjust the position of said antenna mounting means.

4. A portable antenna structure according to claim 3, further comprising an adjustable means at the lower end of each of said legs comprising a hollow metal sleeve formed with a sharpened ground-piercing end, and roller cam means on said sleeve cooperating with said leg to adjustably retain the end of said leg in a desired position within said sleeve.

5. A portable antenna according to claim 3, further comprising means for adjustably controlling the length of each leg rod, comprising a hollow sleeve to receive one end of said leg rod, said sleeve being slotted on one side thereof, a bracket on said sleeve adjacent said slot and provided with a cam slot at a predetermined angle to said sleeve, a rotatable locking wheel having its shaft mounted in said cam slot and its periphery extending through the slot in said sleeve, and a strip forming a bearing plate for said locking wheel fixed to said one end of said leg and positioned to slide in said sleeve slot, whereby said leg may be locked in adjusted position with said sleeve.

6. A tripod support according to claim 1 wherein the means for detachably mounting the leg rods comprises sockets mounted on the retaining means for receiving the ends of the leg rods, slots in said sockets, projecting means on the rod for entering said slots and holding means for the rod cooperating with said projecting means.

AVERY G. RICHARDSON.
CASPER S. BEDNASH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
202,713	Everett	Apr. 23, 1878
781,977	Wentworth	Feb. 7, 1905
2,130,993	Dubilier	Sept. 20, 1938
2,282,285	Olson	May 5, 1942
2,289,695	Bryant	July 14, 1942
890,804	Shears	June 16, 1908
994,598	Martin	June 6, 1911

FOREIGN PATENTS

Number	Country	Date
17,948	France	Dec. 19, 1913
122,201	Switzerland	Sept. 1, 1927