

April 21, 1959

L. C. MARATZKE ET AL
ADJUSTABLE ANTENNA MOUNTING

2,883,665

Filed June 24, 1957

2 Sheets-Sheet 1

Fig. 1

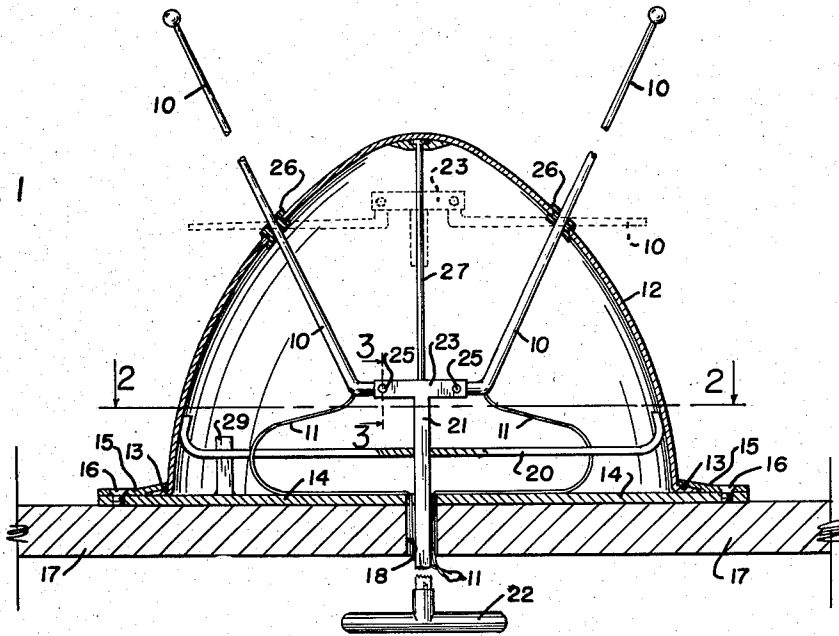


Fig. 2

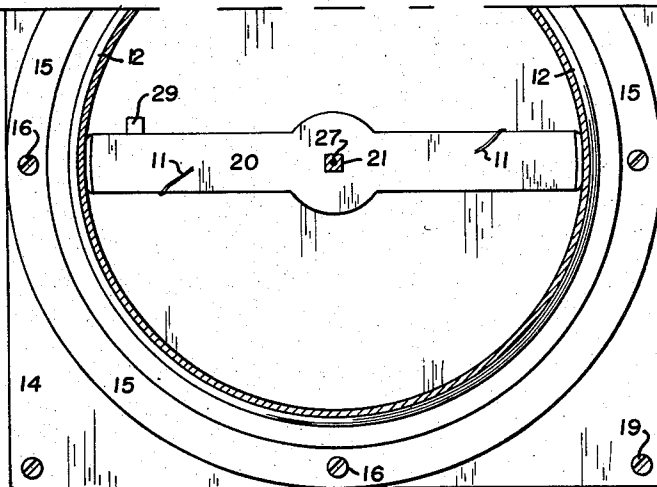


Fig. 3

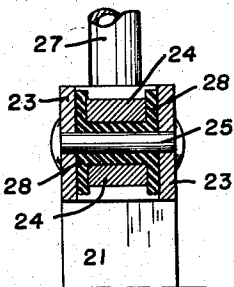
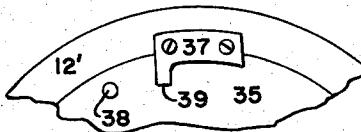


Fig. 9



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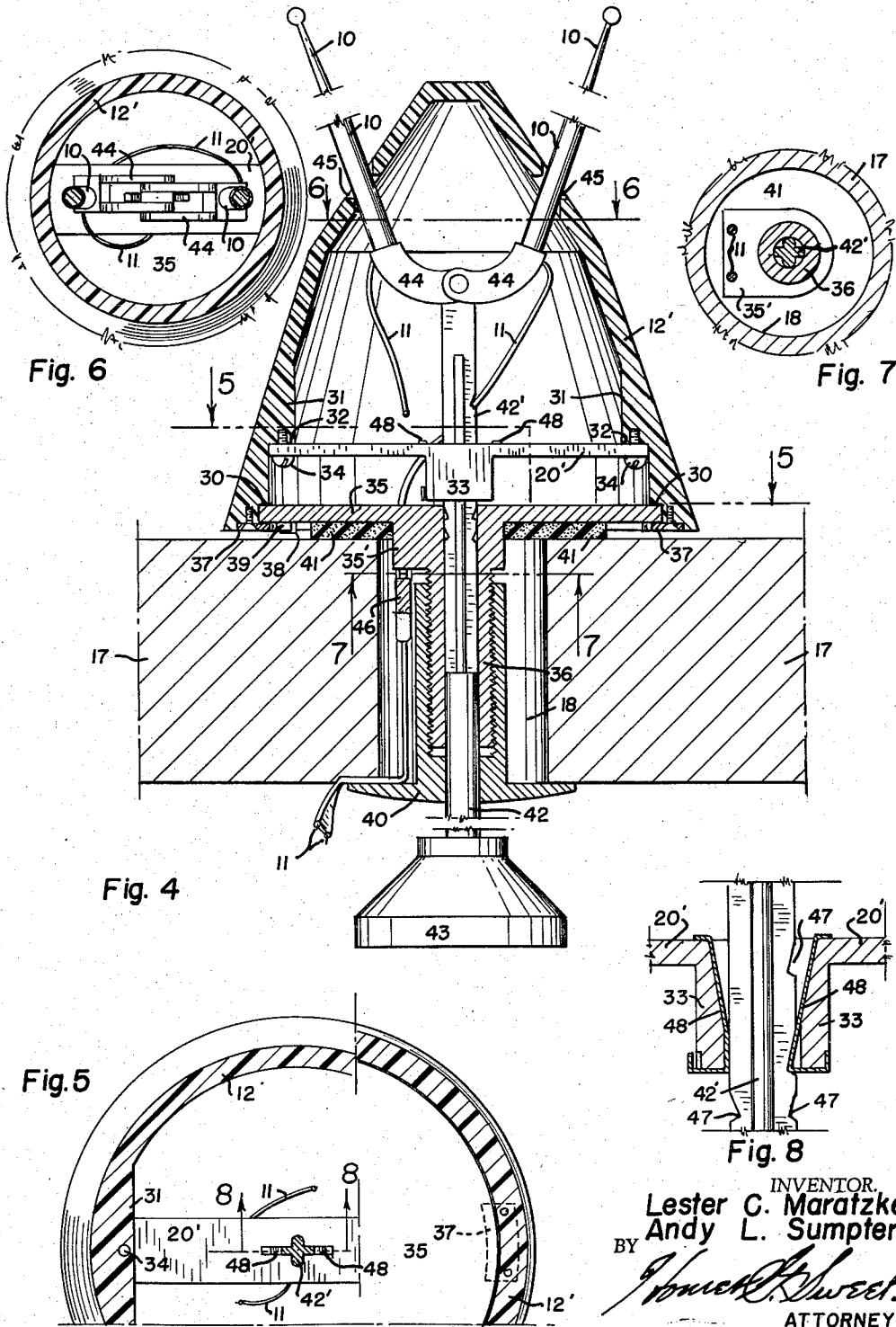
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ADJUSTABLE ANTENNA MOUNTING

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Application June 24, 1957, Serial No. 667,464

11 Claims. (Cl. 343—878)

This invention relates to mountings for a conventional type of antenna extensively employed to intercept and receive television signals, and has as an object to provide a novel and improved such mounting of high utility, wide adaptability, and unique operative facility.

A further object of the invention is to provide a novel and improved mounting adapted to operatively support and position a conventional television antenna for convenient selective orientation about a vertical axis.

A further object of the invention is to provide a novel and improved mounting adapted to support and position a conventional television antenna for convenient selective adjustment between an elevated operative condition and a lowered inoperative condition.

A further object of the invention is to provide a novel and improved mounting that is particularly applicable to effect practical, operative association of a conventional television antenna with shiftable and mobile units, such as vehicles, vehicle trailers, and the like.

A further object of the invention is to provide a novel and improved mounting for a conventional television antenna that is simple and convenient of installation in any appropriate use location.

A further object of the invention is to provide a novel and improved mounting for a conventional television antenna that is expedient of inexpensive production in a range of desired sizes from diverse materials of ready availability.

A further object of the invention is to provide a novel and improved construction and operative organization of elements constituting a selectively-adjustable mounting for a conventional television antenna.

With the foregoing and other objects in view, our invention consists in the construction, arrangement, and operative combination of elements as hereinafter set forth, pointed out in our claims, and illustrated by the accompanying drawings, in which:

Figure 1 is a vertical section substantially axially through a typical embodiment of the invention as installed to mount a conventional television antenna in position of practical use and as adjusted to elevate the associated antenna for operation, broken lines in the view indicating an alternative lowered disposition of the antenna selectively available by virtue of relationships featuring the mount.

Figure 2 is a transverse section through the organization according to Figure 1 taken substantially on the indicated line 2—2 of said latter view, a marginal portion of the showing being broken away to conserve space.

Figure 3 is a fragmentary, detail section, on a relatively enlarged scale, taken substantially on the indicated line 3—3 of Figure 1.

Figure 4 is a vertical sectional view similar to Figure 1 illustrating an alternative construction effective to realize the purposes of the invention.

Figure 5 is a two-plane sectional view taken substantially on the indicated line 5—5 of Figure 4.

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Figure 6 is a transverse section taken substantially on the indicated line 6—6 of Figure 4.

Figure 7 is a transverse detail section taken substantially on the indicated line 7—7 of Figure 4.

5 Figure 8 is a fragmentary, detail section, on a relatively enlarged scale, taken substantially on the indicated line 8—8 of Figure 5.

Figure 9 is a fragmentary, bottom plan view of elements and association shown at the left-hand side of Figure 4.

10 Commonly known from its appearance as a "rabbit-ears" type, a television antenna widely in use to feed signals to individual receiving sets consists of like, straight, stiff, preferably-tapered, metallic rods 10 complementarily paired in an upward and outward divergence of their lesser ends to define a vertical plane expediently susceptible of angular orientation with respect to the direction of the signals to be intercepted thereby. Antennas of the type shown and described function in a variety of fixed, shiftable, and angularly adjustable installations either indoors or outdoors and at various convenient levels of elevation when the rods 10 are suitably supported and correlated at their lower ends and leads 11 properly connect said lower ends with a receiving set, but optimum performance of the antenna seems to derive from an installation thereof outdoors at a maximum expedient elevation, as in extension above the roof of the structure housing the receiving set, appropriate to expose the antenna rods 10 to the signal waves as openly and directly as may be feasible. Applicable to mount the rods 10 of the typical antenna in position for maximum effectiveness exteriorly of and in extension above a structure and for angular adjustment about a vertical axis, the improvements of the instant invention are of especial advantage for mounting of the antenna on, and in efficient operating relation with, receiving sets housed within vehicles, trailers, mobile homes, and the like, subject to frequent shift from site to site and consequent necessity for removing or lowering the associated antenna during transit to prevent damage thereof, since the mounting shown and hereinafter described is characterized by unique means selectively actuable interiorly of the structure carrying the antenna to shift the antenna rods to and between elevated and lowered dispositions.

45 The antenna mounting of the instant invention as shown in Figures 1-3, inclusive, is distinguished by a domed hood 12 of any suitable rigid, weather-resistant material, such as metal, synthetic resin, and the like, symmetrical with respect to an axis centrally of and perpendicular to the plane of its open end, imperforate save as hereinafter specified, and formed with an annular flange 13 projecting radially from and extending peripherally about its open end. The hood 12 is inverted over and closes at its flange 13 against the upper face of a flat, rigid plate 14, of appropriate size and material, wherewith it is engaged for relative rotation by means of an annulus 15 sized to loosely embrace the hood adjacent said flange in a width exceeding the radial extension of the latter and conformed to loosely overlap the flange 13 with its inner zone when its outer zone is detachably clamped to the face of the plate 14, as by means of screws 16. Associated in any arrangement equivalent to that shown and described, the hood is retained on the plate 14 for rotation relative thereto about its axis perpendicular to the plate. The plate 14 serves as a base attachable as desired to a roof portion 17 of the structure to which the improved mounting is to be applied, and said plate is formed with a central aperture coaxial with the hood 12 and adapted to register with a corresponding opening 18 formed through the roof 17 when said plate is secured in horizontal disposition to and exteriorly of

the roof, as by means of screws 19, whereby to mount the hood 12 in extension above the roof for projection of its axis of rotation vertically therethrough.

Conditioning the hood and plate assembly just described for selectively-adjustable support of the antenna typified by the rods 10 in accordance with the principles of the invention, a strut 20 is fixed within and to span diametrically of the hood 12 inwardly adjacent the open end of the hood to spacedly parallel the adjacent face of the plate 14 associated with the hood, and an angularly-margined hole centered on the vertical axis of the hood intersects said strut for the reciprocable accommodation of a straight, rigid stem 21 of an angular cross section corresponding with the shape of the hole. Coaxial with the hood 12 by virtue of its engagement through the hole in the strut 20, the stem 21 is disposed for free accommodation through the opening 18 and the aperture of the plate 14 registered with the latter and is of a length to traverse said opening and aperture with its upper end retained within the hood and to depend below the roof 17 to connection with a suitable terminal handle 22 convenient for rotative and reciprocative manipulation of the stem. Within the hood 12 and at the side of the strut 20 remote from the handle 22, the stem 21 terminates in an integral or fixedly-associated cross-head 23 perpendicular to the stem and correspondingly extending in both directions laterally thereof. The free, outer ends of the cross-head 23 are formed with notches opening laterally of the stem arranged to receive eyes 24 formed on the larger, convergent ends of the rods 10 and are traversed by pins 25 which engage through said eyes 24 to hingedly connect each of said rods to one end of the cross-head. Thus the rods 10 are associated for travel with the stem 21 and its cross-head 23 and for oscillation through corresponding, opposed arcs about the axes of their respective pins 25 in a common plane containing the axis of the hood 12, which plane is fixed diametrically of the hood by reason of the angularity characterizing the sliding engagement of the stem through the strut 20 and is vertical when the assembly is mounted in position of use. With the stem 21, cross-head 23, and rods 10 held against rotation relative to the hood 12 as above set forth, it is feasible to extend the rods 10 from the hood through openings therein furnished with grommets 26 of resilient material adapted to yieldably seal about the associated rod in slidable coaction therewith. The holes through the hood 12 mounting the grommets 26 are symmetrically disposed in diametric opposition with their centers in the plane containing the hood axis and the rods 10 and similarly intersect the dome of the hood in a corresponding location along the arc thereof such as serves to support and position the rods 10 engaged therethrough in that divergence upwardly and outwardly of the hood appropriate for efficient functioning of the extended rods as a television receiving antenna when the cross-head 23 hingedly carrying the lower ends of said rods is retracted toward and into spacedly-adjacent relation with the strut 20, as represented by full lines in Figure 1. Organized as shown and described, the improved mounting is featured by the convenience and facility with which the rods 10 may be shifted from elevated, operative position to a lowered condition substantially minimizing the possibility of hazard thereto during shift of the structure represented by the roof 17 from one site to another, since upward thrust applied to the handle 22 acts through the stem 21 in its sliding engagement through the strut 20 to elevate the cross-head 23 and the hingedly-associated ends of the rods 10 interiorly of the hood 12 and to correspondingly depress the portions of said rods exterior to the hood as said rods slide and fulcrum in their respective grommets 26 to attain the positions represented by broken lines in Figure 1. A stiff, straight, elongated pin 27 depends axially and interiorly of the hood 12 from fixed connection at one end with the crown of the hood and is slidably received in a bore axially of the stem 21 and

opening through the upper side of the cross-head 23 as a guide effective in conjunction with the slidable engagement of the stem 21 through the strut 20 to determine and maintain the reciprocative travel path of said stem.

End portions of the rods 10 adjacent their eyes 24 may be angularly offset, as represented by Figure 1, for consequent regulation of the angular relation between said rods in the various positions of their adjustment as controlled by shift of the stem 21, and the leads 11 preferably connect with the rods 10 at the elbows resulting from said offsets and extend to connection with the receiving set through the channel in the roof 17 and plate 14 provided for accommodation of the stem 21, or otherwise, as may be deemed practical and expedient, there being, naturally, sufficient slack in said leads within the hood 12 to permit full reciprocation of the stem without strain on the leads. The rods 10 are electrically insulated from the hood 12 by means of the grommets 26 and are electrically isolated from the other elements of the assembly, with the exception of the leads 11, by means of a sleeve, bushing, or thimble 28, or the equivalent, of suitable insulating material shielding the eye 24 of each rod from contact with adjacent surfaces of the pin 25 and elements of the cross-head 23, as typified by Figure 3.

Revolubly mounted for rotation about its axis relative to the plate 14 as above described, the hood 12 carrying the rods 10 is convenient of angular adjustment for orientation of the plane common to said rods with respect to the signal waves to be intercepted through simple manipulation of the handle 22; any rotational force applied to said handle acting through the stem 21 and the angular engagement thereof through the strut 20 to correspondingly rotate the hood and the elements therewith associated. To obviate any possible inadvertent twisting of the leads 11 in consequence of hood rotation, a stop 29 fixedly upstands from the plate 14 just within the hood 12 in a height engageable at times by a margin of the strut 20, whereby to limit rotational adjustment of the hood relative to the plate to an arc slightly less than a half circle.

The alternative embodiment of the invention according to Figures 4-8, inclusive, is functionally identical with that hereinabove described in a variation of structural detail and organization particularly adapted for production from moldable materials, such as synthetic resins. In the alternative embodiment, the domed hood 12 of the construction first described is replaced by an analogous, operatively-equivalent, generally-conical member 12' molded from appropriate material as a shell open at its greater base end, formed with an interior, annular shoulder 10 inwardly from and parallel to its greater base end, and with diametrically-opposed, chordal intrusions 31 defining ledges 32 parallel to and spaced inwardly of the shell from the plane of the shoulder 30. A strut 20' similar to the strut 20 is formed with a central boss 33 offset laterally thereof and spans diametrically of the shell in end-bearing engagement against the ledges 32 whereto it is affixed by means of screws 34 with the said boss 33 directed toward the greater base end of the shell in nonintersecting relation with the plane of the shoulder 30. A rigid, circular plate 35 integral with or affixed to one end of a coaxial, externally-threaded, tubular stem 36 is rotatably received in and closes entirely across the greater base end of the shell in marginal bearing engagement against the shoulder 30 whereto it is held by means of angularly-spaced clips 37 recessed in and detachably secured to the greater base end of the shell in a projection inwardly thereof effective to lap over and retain the annular margin of the plate. As so mounted, the plate 35 is freely rotatable relative to and in closing relation across the otherwise open greater end of the member 12' supported thereupon, and such relative rotation of the shell and plate is preferably restricted to approximately one full turn by means of a stud 38 pro-

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jecting from the exposed surface of the plate 35 for engagement at times against a stop 39 carried by and projecting inwardly of the assembly from one of the clips 37.

The stem 36 threadedly coacts with a headed thimble 40 to mount the member 12' on and in operative extension above the roof 17 of the structure wherewith the improvement is to be associated. With a hole 18 of suitable size provided through the roof 17 and a sealing gasket 41, or equivalent spacer, against the exposed face of the plate 35 about the stem 36 in a size to engage the roof 17 about the hole 18, insertion of said stem within the hole 18 to threaded coaction with the thimble 40 introduced from the other side of the roof serves as said thimble is advanced along the stem to perfect a secure clamp mounting of the plate 35 in slightly-spaced, fixed relation with the roof 17 for consequent extension of the associated member 12' above the roof for free rotational adjustment about its substantially vertical axis relative to the so-fixed plate.

Slidably and rotatably accommodated within the stem 36 and through a corresponding registered bore in the head of the thimble 40, an actuating shaft 42 is furnished with a manipulating handle 43 on its end exterior to said thimble and is formed with a length portion 42' remote from said handle of angular, preferably X-shaped, cross section slidably and nonrotatably traversing a complementary aperture through the strut 20' and boss 33 axially and interiorly of the member 12'. Thus, rotation of the handle 43 at one side of the roof 17 is applied through the shaft 42 and the connections just described to effect rotation of the member 12' at the other side of the roof and peripherally about the fixed plate 35. The shaft portion 42' extends well within the member 12' beyond the strut 20' and terminates in a flattened end whereto complementary, arcuate clevises 44 are pivoted to extend oppositely and radially of the member therefrom. The outer ends of the clevises 44 operatively engage with and support the inner ends of the paired antenna rods 10 entered interiorly of the member 12' through diametrically-opposed apertures 45 intersecting an upper portion of the latter for slidable guiding and fulcruming coaction with said rods as above explained. The apertures 45 may be formed in any manner suitable to provide an adequate weather seal about the associated rods 10 while accommodating shift and angular adjustment of the latter there-through; it being feasible, if desired, to provide the yieldable grommets 26 of the first-described embodiment in operative association with the said apertures 45, as should be fully obvious. With the clevises 44 and member 12' formed from dielectric material, as is preferred, the rods 10 are electrically insulated from elements of the mounting and from each other in a manner conveniently typifying any equivalent arrangement, and the leads 11 connect with the inner ends of said rods whence they extend loosely within the member 12' through the plate 35 and hub enlargement 35' thereof mounting a separable plug connector 46 to traverse the hole 18 for connection with the receiver to be served by the antenna. Organized as shown and described, the shaft 42 is reciprocable axially of the associated assembly to correspondingly rock the rods 10 through coplanar vertical arcs between an elevated disposition appropriate for signal reception and a lowered position superjacent the roof 17, all in the manner and for the purposes hereinabove set forth.

Supplemental to the frictions tending to retain the relatively reciprocable elements of the assembly in any given adjusted position, means may be provided to determine various desired positions of such adjustment and to yieldably latch the movable elements in any selected one thereof, typical such means being represented as including notches 47 spacedly and successively interrupting side margins of the shaft 42' portion reciprocable through the strut 20' and its boss 33 and leaf-spring detents 48 resiliently and yieldably engageable with said notches from an operative mounting on said strut and boss.

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Since changes, modifications, and variations in the form, construction, and arrangement of the elements shown and described may be had without departing from the spirit of our invention, we wish to be understood as being limited solely by the scope of the appended claims, rather than by any details of the illustrative showing and foregoing description.

We claim as our invention:

1. An antenna mounting comprising a member adapted to be secured in a horizontal disposition, a hood revolvably associated with and closing over the upper surface of said member, outwardly-divergent antenna rods slidably fulcrumed through said hood, and means rotatably and reciprocably intersecting said member hingedly engaged with inner ends of said rods manipulable to rotate said hood on said member and to angularly adjust said rods in a plane perpendicular to the member.

2. An antenna mounting comprising a member adapted to be secured in a horizontal disposition, an annular element on said member, a hood revolvably engaged with said element and closing over said member, outwardly-divergent antenna rods slidably fulcrumed through said hood, and means rotatably and reciprocably intersecting said member centrally of said element hingedly engaged with inner ends of said rods manipulable to rotate said hood on said member and to angularly adjust said rods in a plane perpendicular to the member.

3. An antenna mounting comprising a member adapted to be secured in a horizontal disposition, an annular element on said member, a hood revolvably retained on said element in closing relation over said member, outwardly-divergent antenna rods slidably fulcrumed through diametrically-opposed zones of said hood, a strut fixed diametrically of said hood spacedly adjacent and parallel to said member, and means non-rotatably reciprocable through said strut and loosely through said member in hinged engagement with inner ends of said rods manipulable to rotate said head on said member and to angularly adjust said rods in a plane perpendicular to the member.

4. An antenna mounting comprising a plate adapted to be secured in a horizontal disposition, an annular element detachably engaged with the upper surface of said plate, a hood revolvably retained in said element and closing over said plate, outwardly-divergent antenna rods slidably fulcrumed through resilient grommets opening through diametrically-opposed zones of said hood, a strut fixed diametrically of said hood spacedly adjacent and parallel to said plate, a cross-head hingedly interlinking inner ends of said rods parallel to said strut at the side thereof remote from said plate, and a stem loosely through said plate non-rotatably reciprocable through said strut fixed centrally of and perpendicular to said cross-head for manipulation pertinent to rotate said hood on said plate and to angularly adjust said rods in a plane perpendicular to the plate.

5. The organization according to claim 4, wherein ends of said cross-head are formed as notches opening diametrically and outwardly of the hood, inner ends of said rods are formed as eyes receivable in said notches, and pins traversing said notches through the associated eyes parallel to said plate hingedly couple the rods to the cross-head.

6. The organization according to claim 4, wherein an elongated pin fixedly depends coaxially and interiorly of the hood in slidable coaction with said cross-head and the associated stem, whereby to provide a guide determinative of the path of cross-head reciprocation.

7. An antenna mounting comprising a circular plate adapted to be secured in a horizontal disposition, a hood revolvably retained on and in closing relation over said plate, outwardly-divergent antenna rods fulcrumed through diametrically-opposed zones of said hood, a strut fixed diametrically of said hood spacedly adjacent and parallel to said plate, and means non-rotatably reciprocable

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cable through said strut and loosely through said plate in hinged engagement with inner ends of said rods manipulable to rotate said hood on said plate and to angularly adjust said rods in a plane perpendicular to the plate.

8. The organization according to claim 7, wherein said circular plate coaxially terminates a separable tubular fitting clampably engageable through the roof of a structure.

9. The organization according to claim 7, wherein said hood is interiorly shouldered about its open end for revoluble coaction with the periphery of said plate and clips projecting inwardly of the hood from detachable association with the open end thereof overlap the plate margin to retain the hood on the plate.

10. The organization according to claim 7, wherein the means manipulable for adjustment of the hood and antenna rods is a straight shaft formed with a portion of

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angular cross section reciprocable axially of the hood through a correspondingly angular aperture in said strut and terminates inwardly of the hood beyond the strut in an eye whereto inner ends of the antenna rods pivotally connect through complementary terminal clevises.

11. The organization according to claim 7, wherein the means manipulable for adjustment of the hood and antenna rods is a straight shaft formed with a portion of angular cross section reciprocable axially of the hood through a correspondingly angular aperture in said strut, side margins of said shaft portion are notched, and resilient detent means acting in the aperture of the strut yieldably engage said notches to latch the shaft in various of its positions of adjustment relative to the strut.

No references cited.