

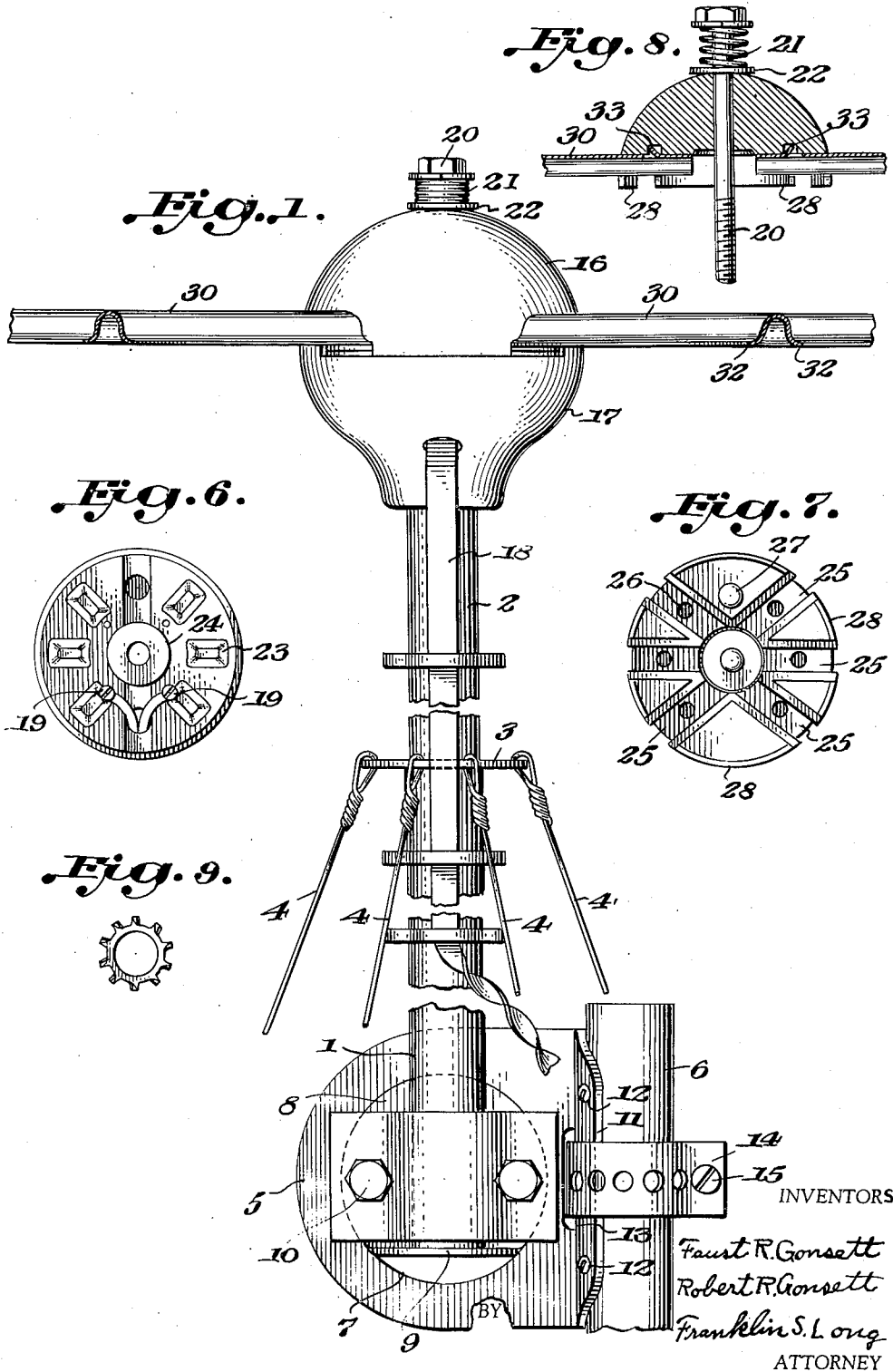
Nov. 28, 1950

F. R. GONSETT ET AL
TELEVISION ANTENNA

2,532,094

Filed Oct. 27, 1949

5 Sheets-Sheet 1



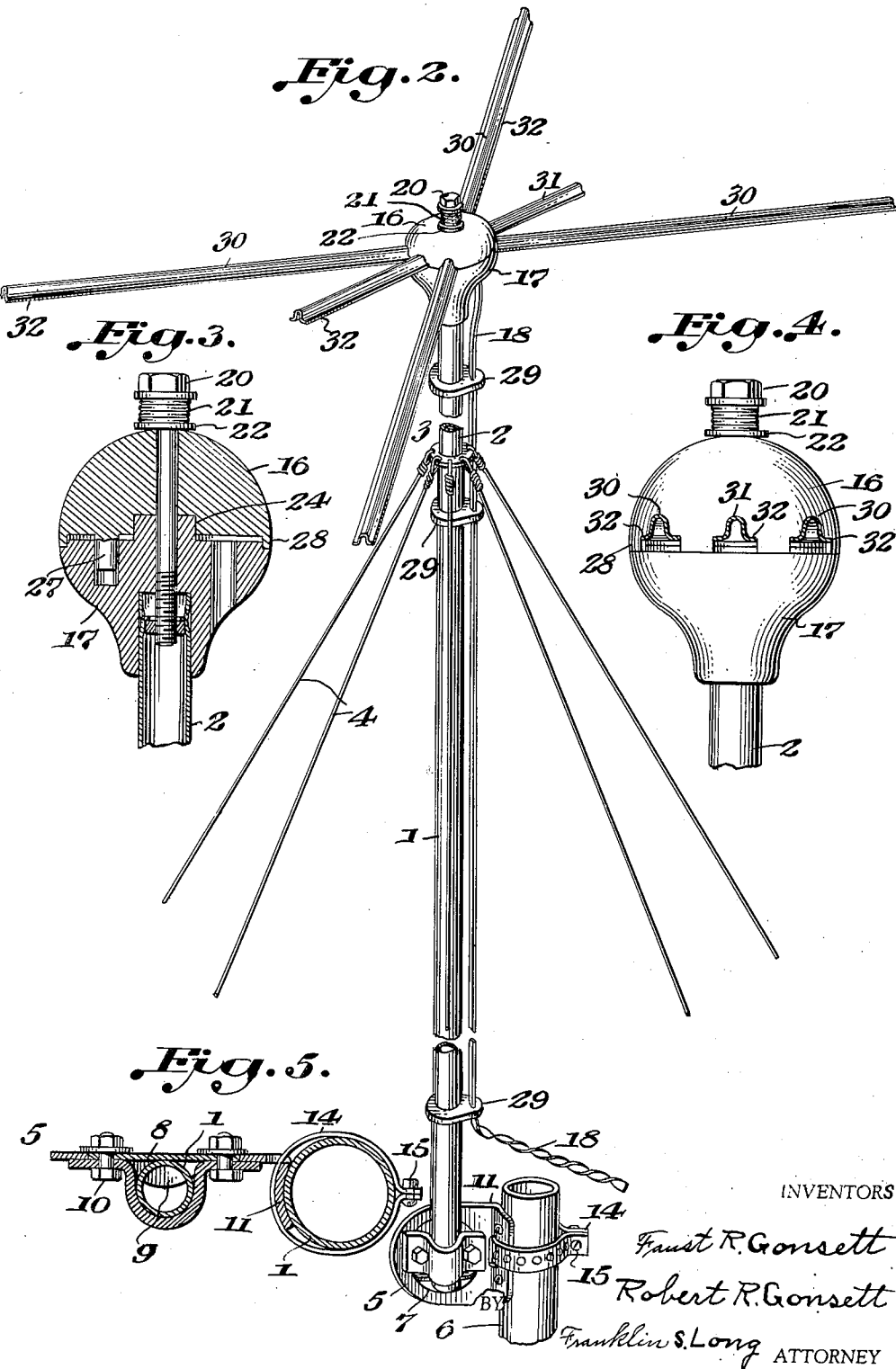
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5 Sheets-Sheet 2



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5 Sheets-Sheet 3

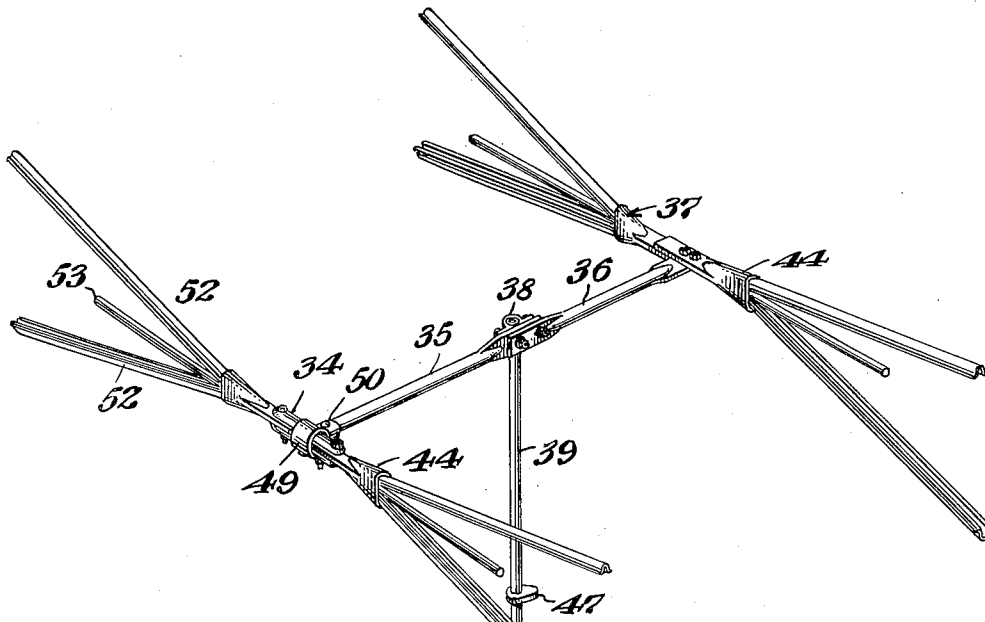


Fig. 10.

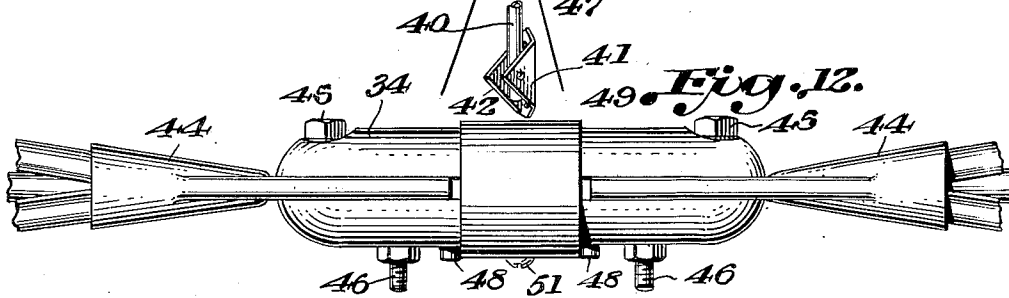


Fig. 12.

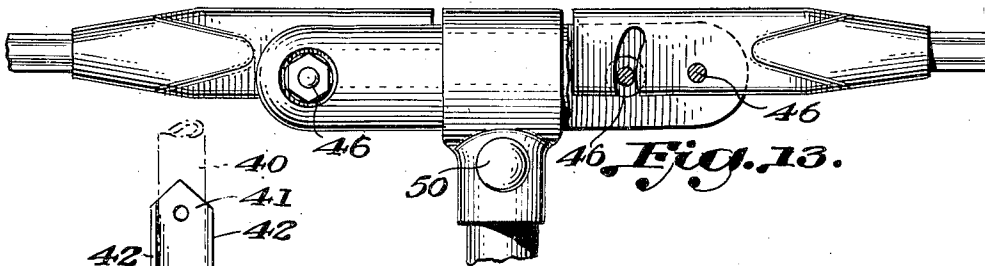


Fig. 13.

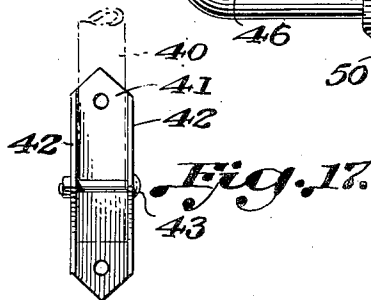


Fig. 17.

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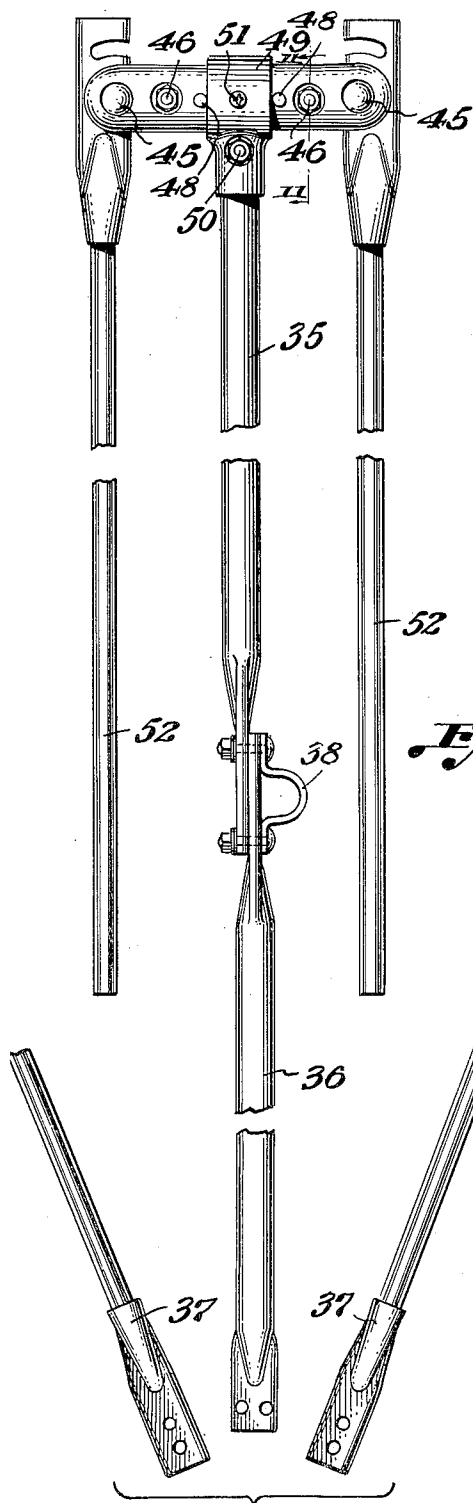


Fig. 14.

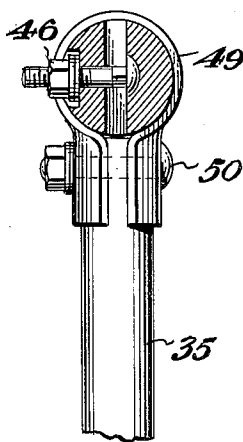


Fig. 11.

Fig. 15.

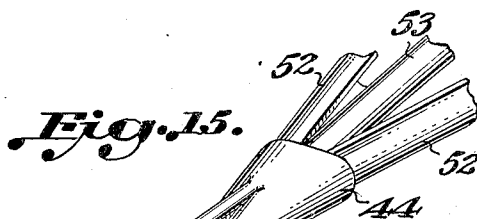
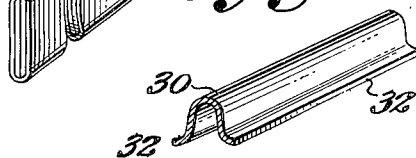


Fig. 16.



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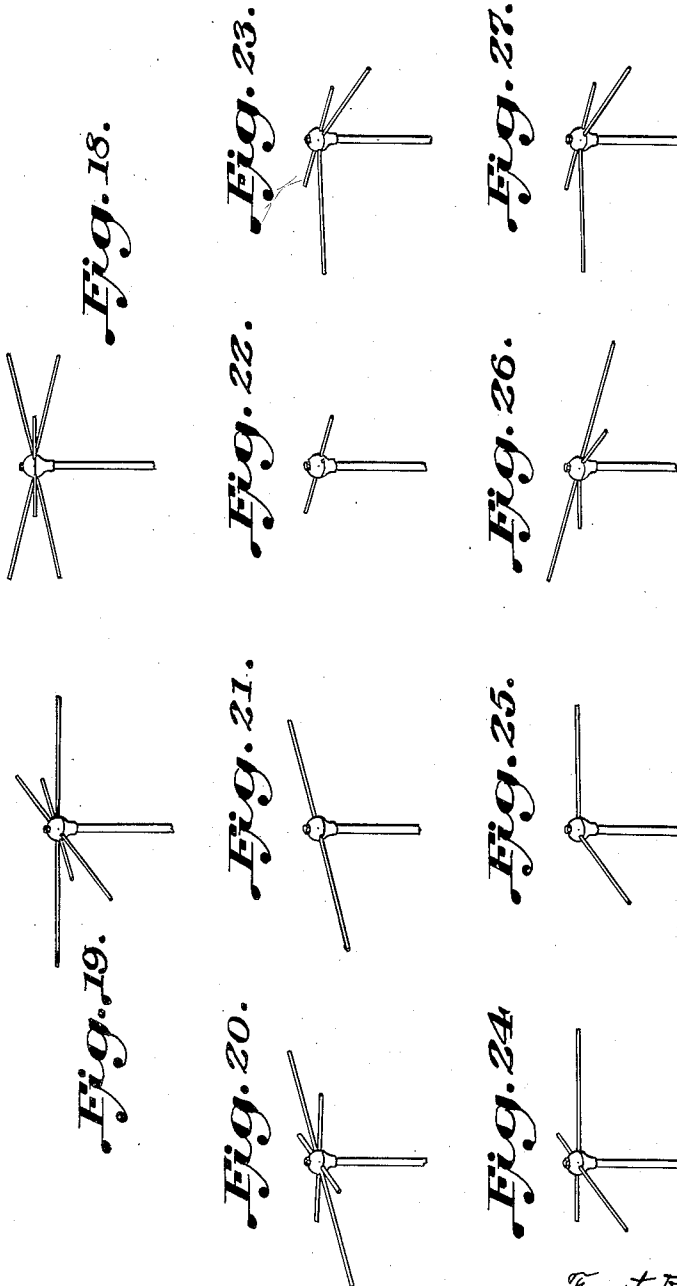
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UNITED STATES PATENT OFFICE

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TELEVISION ANTENNA

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5 Claims. (Cl. 250—33)

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This application relates to antenna constructions, more particularly to television antenna constructions.

It is well known that television antenna constructions, when assembled, are large and unwieldy space occupying contrivances which are to handle and entail heavy costs for the packaging and transportation of the same unless collapsed to save space and reduce transportation expenses. Besides it would be exceedingly expensive to crate or package a fully assembled television construction.

It is one of the objects of our invention to produce a complete television antenna construction and to package the same securely in a collapsed or knockdown condition for inexpensive handling and transportation. When each package has reached its destination it can be removed from the package receptacle and readily assembled in its condition for mounting upon a roof or equivalent structure for its intended and ultimate use.

It is an object of our invention to produce a television antenna construction having excellent wave intercepting and collecting qualities so that the television waves may be conducted by suitable leads or conductors to a television receiver with sufficient strength and intensity to produce a clearly defined picture on the screen of the television receiver.

It is a further object of our invention to produce antenna elements of particular construction having the reinforcing quality imparted to it by the particular contour resulting from the shaping of suitable strip material.

Other objects, as well as advantages will be revealed in the detailed description of the accompanying drawings which constitute a part of this application.

In the drawings:

Fig. 1 is a foreshortened elevation of our television antenna being partly in section and the elements are shown in a fragmentary condition.

Fig. 2 is a foreshortened perspective view of our complete antenna.

Fig. 3 is a vertical transverse section comprising the head of the antenna construction.

Fig. 4 is an elevation partly in section showing the complete antenna head.

Fig. 5 is a transverse section through the clamping means for the antenna post.

Fig. 6 is a plan view of the lower section of the head showing the conductor connections which lead to the receiver.

Fig. 7 is a plan view as seen from the bottom of the upper section of the head.

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Fig. 8 is a transverse fragmentary section showing the upper section of the head in cross section and including the fastening means for clamping together the sections of the head.

Fig. 9 discloses a plan view of a lock washer located between the upper end of the post and a portion of the lower section of the head.

Fig. 10 is a perspective view of a modification of our television antenna.

Fig. 11 is a plan view of a portion of the collapsed antenna.

Fig. 12 is a fragmentary side elevation disclosing the assembled condition of the antenna elements.

Fig. 13 is a plan view of the same construction with a portion broken away to display clearly the clamping means for the movable antenna element.

Fig. 14 is a transverse section on the line 11—11 of Fig. 11.

Fig. 15 is a fragmentary perspective view of one group of antenna elements swedged into a combined connector and socket element.

Fig. 16 is a perspective view showing the cross sectional contour of the element.

Fig. 17 is a plan view of the base element for securing the post in position on a suitable support not shown.

Fig. 18 is a side elevation of a schematic arrangement of antenna elements as assembled and clamped into position.

Figs. 19 to 27 inclusive are schematic arrangements of a variety of antenna elements which may be selected to produce what is considered the best assemblage under the conditions existing.

In the drawings the post 1 comprises a lower section and an upper section 2. These sections are preferably hollow and are telescopically secured together. The lower section is provided with internal dimensions substantially equal to the external dimensions of section 2 so that these sections can be secured together with substantially a driving fit. The top edge of the lower section constitutes a shoulder which supports a collar 3. The collar accurately fits the upper section 2 and rests on the lower section and is provided with apertures or equivalent means for engagement by guy wires 4. The guy wires 4 merely serve as bracing means for maintaining the post in an upright position. The lower ends of the guy wires 4, not shown, are suitably secured to a roof construction or the like by the use of eyelets or other equivalent means.

The lower end of the post is provided with a clamp construction 5 having to some extent at least the qualities of universality in that it can be

adjusted and secured to a variety of supports such as a roof, not shown, or a post 6 projecting from a roof or the like. The bracket arm of the clamp is provided with a circular aperture 7 receiving a circular plate 8 having a lateral projection 9 against which the post rests. The bracket arm and the circular plate are of substantially the same thickness so that a flanged U-shaped clamping member provided with bolts extending through the flanges and the circular member may be clamped in any desired position of angular adjustment by the use of washers on the bolts 10 which extend from the circular plate to a position engaging over the circular edge of the bracket arm. The bottom portion of the post 1 is received in the U-shaped clamping member and is also clamped to the bracket arm and circular plate by the same bolts 10. The base flange 11 is substantially at right angles to the bracket arm and is provided with apertured portions whereby it may be secured to a roof construction, not shown, or to the post or projection 6 by the use of screws or bolts 12. The clamp is also provided with a slotted portion 13 adapted to receive a clamping band 14 having a plurality of apertures providing for the use of a clamping bolt 15.

The particular clamping construction above described lends its self to substantially universal adjustment of the upright post 1. After the post is adjusted as desired then the guy wires are secured in position while the post is maintained in its desired and adjusted position.

A head is supported on and secured to the upper end of the post section 2. The head comprises upper section 16 and lower section 17. These head sections are molded separately by using a weather resisting composition comprising a suitable plastic material having excellent dielectric properties.

The lower section 17 supports a pair of metallic segments having excellent electrical conducting properties. These segments are arranged in spaced relation providing for a dowel pin projecting from the upper section 16, said pin extending into a recess of the lower section. Opposite from the recess is located a passageway for the conductor leads 18. The upper ends of the conductor leads are suitably secured to the metallic segments by screws 19. The lower section is provided with a socket portion to receive the upper end of the post section 2. The section 2 is provided with a screw threaded element or nut swaged into position so that a securing and clamping bolt 20 extending through the upper section 16 may engage the fixed nut in the post section 2 in order to clamp the head parts and antenna elements together in a substantially fixed position. The bolt 20 is preferably provided with a spring cushion 21 supported on a washer 22. The metallic segments are provided with bosses 23 which extend upwardly a short distance into the channel of the antenna elements. The head section 17 is also provided with an upwardly extending boss 24 to assist in properly aligning the head sections. The lower section is also provided with a peripheral recess to accommodate depending flanges of the upper section 16.

The upper section 16 is provided with spaced radial grooves 25 having recesses 26 in the bottom portions of the grooves. This section is provided with a depending dowel pin 27 which aligns properly both sections of the head and is also provided with depending flanges 28 which engage the upper recess portion of section 17. The relation

of the recess and flanges is such as to facilitate the shedding of rain and the like during inclement weather and thereby prevent undesirable short circuiting of electrically conducted parts.

In order to prevent the swaying and swinging of the conductor leads 18 we have provided dielectric collars 29 surrounding the post at suitably spaced intervals. Each collar is provided with an elongated aperture in its peripheral portion through which the conductor leads 18 are reeved as clearly indicated in Fig. 2.

The antenna elements comprise channel bars 30 and 31 having laterally extending flanges 32 constituting an exceedingly strongly reinforced element and if bent accidentally lends itself to the straightening of the same. The inner end of each element is provided with a struck-up tongue 33 received in the recesses 26 of the upper section 16. When the sections 16 and 17 are adjusted to a loosely assembled relation the channel elements can be inserted into the grooves 25 of upper section 16. When all of the elements are in properly assembled condition the sections 16 and 17 are firmly clamped together by the bolt 20.

The particular type of elements produced by us is easily produced and comprises a selection of large coils of sheet aluminum approximating 1000 pounds or thereabouts. A suitably hard grade of aluminum is selected, such as what is known in the trade as 24 ST. This coil of sheet material is slitted into portions approximately seven-eighths of an inch wide. These portions or strips are rolled into channel form including the outwardly extending outer flanges 32. The word channel as used herein is deemed to be a generic term including both a U-shaped channel and a V-shaped channel when considering its cross sectional contour. Of course, every variety of channel should have laterally extending flanges.

When this channel stock has been produced suitable lengths are severed therefrom and one end of each link is operated upon to produce a struck-up tongue 33, as clearly indicated in Fig. 8. The shorter element 31 at one side of the head is substantially the length of one-fourth of a wave.

Each of the longer elements is therefore more than one-half wave length measured linearly. Of course any other length could be selected if found desirable.

The modified construction shown in Figs. 10 to 17 inclusive discloses a plastic head 34 comprising upper and lower sections which are suitably supported and clamped to a substantially horizontal arm 35 connected to an additional arm 36 which supports a reflector construction 37. At the junction of the arms 35 and 36 a flanged U-clamp 38 is provided for clamping the same to the upper section 39 of the post 40. The lower end of the post 40 is provided with a channelled bracket 41 having upstanding wings 42. The wings 42 are provided with aligned apertures receiving a bolt 43 which also extends through the lower end portion of the post 40. The bracket 41 is provided in its base with suitable apertures for securing it to a support, not shown. In this connection particular attention is called to the fact that the clamping construction disclosed in Figs. 1, 2 and 5, may be substituted for the channelled bracket 41. It is conclusive therefore that these parts are interchangeable.

The relation of the collar construction plus its connection with guy wires is the same as that

disclosed and described in connection with Figs. 1 and 2.

The sections of the head 34 are made of weather resisting plastic composition having the properties of an excellent dielectric. The sections of head 34 are located in spaced parallel relation and support socket members 44. These socket members comprise flattened portions of one end of a tube and having its other end tubular to receive the antenna elements without deforming them at the tubular end. The flattened end of the tube also includes the flattened ends of the antenna elements. Each socket for the reflector elements is provided in its flattened portion with a pair of spaced apertures corresponding to a like pair of spaced apertures in the end of the arm 36 whereby the reflector may be secured by suitable bolts to said arm 36.

The flattened portion of the socket for the antenna elements is provided with an arcuate open ended slot adjacent its flattened end but spaced from an aperture to receive a bolt 45 whereby said socket and its antenna element may be pivoted to place the antenna construction in a knockdown or collapsed condition. The lower section of the plastic head 34 is provided with apertures to receive bolts 46 having squared shanks adjacent their heads. These squared shanks are adapted to receive the arcuate-slotted portions of the flattened sockets. Each of these bolts 46 constitute connections for transmission wires leading to the receiving set. Each bolt head of bolts 46 impinged directly against the slotted flattened portion of the antenna socket as will be evident from an inspection of Figs. 13 and 14 thereby providing an excellent electrical contact.

The transmission wires are secured at their upper ends respectively to the bolts 46 and the wires are reeved through stays 47 in a manner similar to that disclosed in Fig. 2.

The lower section of head 34 is provided with centering projections 48 which aids in centering the clamping band 49 which embraces the head sections and is secured directly to the arms 35 by a bolt 50. The lower portion of the band is provided with an aperture to receive a clamping screw 51 which screw-threadedly engages the lower section of head 34.

The antenna elements 52 and 53 are swaged securely in the conical or tubular construction 44 and the longer elements 52 are made from the regular stock construction comprising a channel having outwardly flared flanges. The shorter elements 53 may be made of rods, tubes or the regular stock described in connection with the elements 52. The combined cone 44 and the flattened portions thereof of the reflector 37 are structurally the same as that previously described in connection with the antenna elements 52 and 53.

In Figs. 18 to 27 inclusive the plastic heads used are the same as that disclosed in Figs. 1, 2, 3, 4, 6, 7 and 8. Fig. 18 is known in the trade as the "adjustacone." Fig. 19 is known in the trade as "double W"; Fig. 20 is designated as "Hi-Lo"; Fig. 21 is "Di Pole"; Fig. 22 is "Hi Pole"; Fig. 23 is "Phased Hi-Lo"; Fig. 24 is "Extended V-Cone"; Fig. 25 is a "V-Cone"; Fig. 26 is a "Double Dipole"; Fig. 27 is a "Hi-V-Lo." The selective schematic arrangements disclosed in Figs. 18 to 27 inclusive are contemplated for use whenever found feasible.

Although we have disclosed particular arrangements of elements and features in our disclosure it is contemplated that other variations especially

variations in detail may be adopted and it is assumed that such variations should come within the purview of the subject matter claimed herein.

Having fully described our antenna construction what we claim is:

1. A collapsible antenna construction, said construction comprising a post, a base clamp for said post, a head on said post, a support for guy wires, conductor segments, conductor stays and movable antenna elements, said post having a lower section and an upper section, said sections being tubular and telescopically fitted together, the internal dimensions of said lower section being substantially equal to the corresponding external dimensions of the upper section, a portion of said upper section being received in a portion of said lower section with substantially a driving fit whereby said section cannot be accidentally displaced, the upper end of said lower section constituting a shoulder, said base clamp being adjustably secured to and entirely embracing the lower end portion of said lower section, said clamp being provided with means whereby it may be secured to an elevated construction, said guy wire support surrounding and closely fitting said upper section and resting on the upper end and shoulder of said lower section, said antenna elements being secured to and extending radially from said head, said conductor segments being supported in said head and said antenna elements being in contact at their inner ends with one segment, said conductor stays surrounding said post in spaced relation and frictionally engaging the same, said stays having apertured projections to receive conductor leads reeved therethrough.

2. A collapsible antenna construction, said construction comprising a tubular post, a base clamp for said post, a head on said post, a support for guy wires, conductor connectors in said head, conductor stays, and movable antenna elements, said post having a lower section and an upper section, said sections being telescopically fitted together, the internal transverse dimensions of said lower section being substantially equal to the corresponding external dimensions of said upper section, a portion of said upper section being received in a portion of said lower section with substantially a driving fit, whereby said sections are maintained in substantially fixed relation, the upper end of said lower section constituting a shoulder, said base clamp being adjustably secured to and tightly embracing the lower end portion of said lower section, said clamp being provided with means whereby it may be secured to an elevated structure, said guy wire support surrounding and closely fitting said upper section and resting on the upper end and shoulder of said lower section, said conductor connectors being supported in said head and said antenna elements being in electrical contact at their inner ends with said connectors, said conductor stays surrounding said post in spaced relation and frictionally engaging the same, said stays being composed of suitable dielectric material and having slotted projections to receive conductor leads reeved through the slotted projections to prevent waving and swinging of said leads.

3. The construction set forth in claim 2, in which said head comprises upper and lower dielectric sections, said sections having qualities resisting the devastating influences of the weather and composed of a suitable plastic composition, said antenna elements comprising suitable lengths of channelled strips of metallic corrosion re-

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sisting material, said strips having flanges extending laterally and outwardly from the channelled portions thereof, said head having means for supporting said antenna elements in combination with means extending through said sections for clamping said antenna supporting means therebetween.

4. The construction set forth in claim 1, in which said head comprises upper and lower dielectric hemispheres, said hemispheres having qualities resisting the devastating influences of the weather and composed of a suitable plastic composition, said antenna elements comprising suitable lengths of channelled strips of metallic corrosion resisting material, said strips having flanges extending laterally and outwardly from the channelled portions thereof, said upper hemisphere having radial grooves in its circular base portion receiving the inner end portions of said antenna elements, in combination with means to secure said hemispheres together in clamping relation on the inner ends of said antenna elements.

5. An antenna construction comprising an upright post, and horizontal arms extending therefrom, a head clamped to one end of one of said arms, a reflector attached to the outer end of said other arm, said reflector comprising antenna elements extending therefrom in radial relation to each other, said head comprising upper

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and lower sections arranged in spaced relation to receive supports for antenna elements, each support having antenna elements extending in radial relation therefrom, in combination with connector bolts extending through the lower section of said head and electrically engaging said antenna supports, said antenna supports being pivotally connected to said head and provided with arcuate slots whereby said antenna supports and the antennae may be pivoted to a position substantially parallel with said horizontal arms, said reflectors being detachably bolted to the end of its supporting arm.

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