

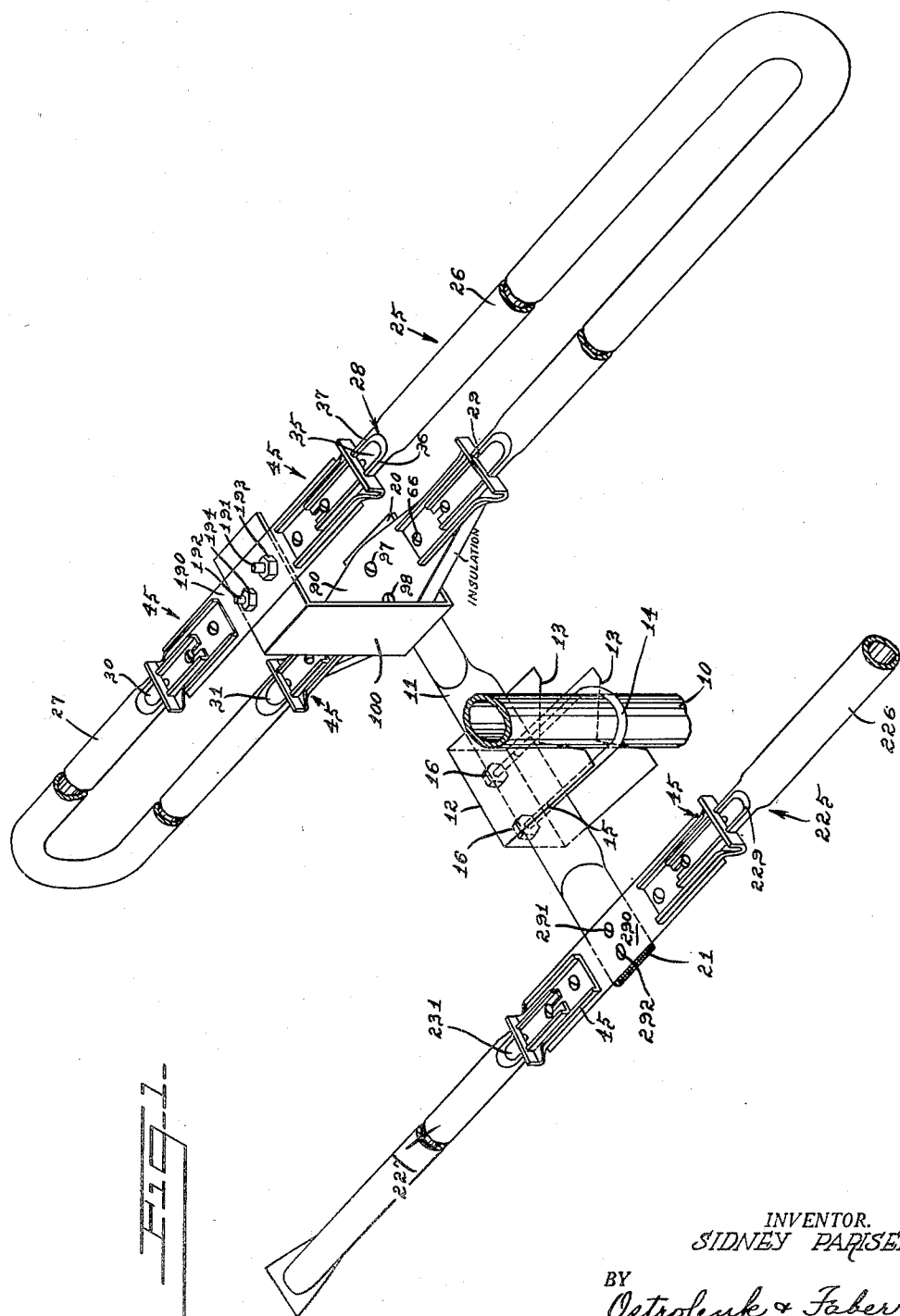
Sept. 11, 1951

S. PARISER
TELEVISION ANTENNA

2,567,577

Filed March 18, 1949

2 Sheets-Sheet 1



INVENTOR.
SIDNEY PARISER

BY
Oetrolenk & Faber
ATTORNEYS

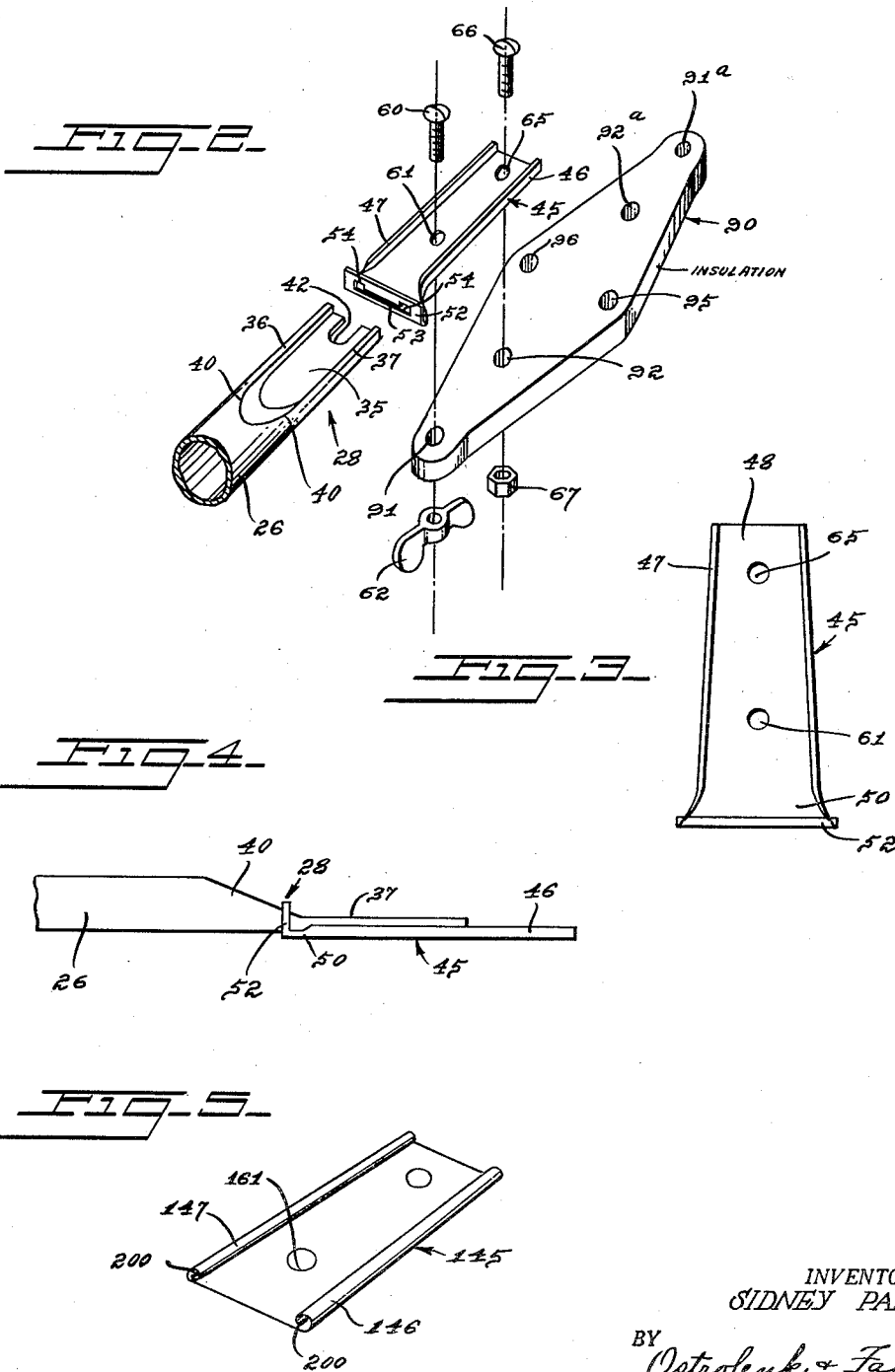
Sept. 11, 1951

S. PARISER
TELEVISION ANTENNA

2,567,577

Filed March 18, 1949

2 Sheets-Sheet 2



INVENTOR.
SIDNEY PARISER
BY
Ostrolenk & Faber
ATTORNEYS

UNITED STATES PATENT OFFICE

2,567,577

TELEVISION ANTENNA

Sidney Pariser, New York, N. Y.

Application March 18, 1949, Serial No. 82,233

14 Claims. (Cl. 250—33)

1

My present invention relates to high frequency antennae and more particularly to a television receiver antenna so constructed and arranged to provide maximum efficiency in intercepting radio frequencies in the television spectrum and adapted to be readily set up from the collapsed position to the fully erected position by simple operations readily performable by the unskilled user.

In television antennae adapted for use in connection with home type television receivers, it is customary to provide some form of vertical supporting structure such as a mast, a horizontal supporting structure which is usually a metallic cross arm secured to the mast, an intercepting dipole which may be of the folded type supported at one end of the cross arm and insulated therefrom, and a reflecting dipole supported at the other end of the cross arm and not necessarily insulated therefrom.

In the case of the folded dipole, the ends thereof usually terminate at the cross arm where appropriate connections may be made by lead-in wires to the television receiver.

Various attempts have been made to form these dipoles and especially the mechanical as well as the electrical connecting elements thereof in such manner that they may readily be assembled without the use of complex tools on the cross arm of the mast.

This has required, however, the utilization of nuts and bolts passing through registering openings which must be lined up accurately in order to permit assembly, tending to make the assembly operation a factory operation or one which must be performed by a skilled television erector or serviceman.

Where the connection was not properly made or insecurely tightened, as frequently occurred in the case of erection of the television antenna by the home user, vibration caused by wind tended to loosen the antenna, thereby causing the antenna itself to wobble or vibrate in the wind resulting in interference with at least video reception.

This vibration when permitted to continue for any reasonable length of time tended also to weaken and at times destroy the effective operating parts of the television antenna.

Where attempts have been made to connect all parts of the television antenna leaving them, however, in folded condition for shipment and storage, the friction or other tightening elements used to secure the parts in erected unfolded condition were subjected to rotary moments of force on a rather long lever arm, especially in the case of a dipole adapted for the reception of the low frequency band television signals, and these antennae also tended to collapse.

The object of my invention is the provision

2

of a quickly set up television antenna which without the utilization of special skill or any special tools will permit a home user promptly and securely to connect the television dipoles to the cross arm of the mast; and this connecting set-up may be made for both the main dipoles and the reflecting dipoles by the most unskilled user within less than a minute.

Another object of my invention is to provide the dipole securing elements connected or connectable to the cross arm of the television mast or to any other suitable supporting structure, the said connecting elements providing rigidifying elements for preventing relative movement of the dipoles with respect to the cross arm of the mast or other unit to which the dipoles are connected; frictionally secure positioning means which are not subject to any rotative moments of force and which can be released only by movement of the dipole elements in a direction which would not occur during the actual use of the antenna; and additional securing means firmly locking the antenna structure and especially the dipoles thereof in place.

Essentially, my invention contemplates the provision of a securing or connecting member with simplified means for mounting the same on a cross arm of the antenna mast or other appropriate antenna support.

The connecting member is channel-shaped having a longitudinal axis extending parallel to the axis of the dipole. The inner end of the dipole is shaped to fit into the longitudinal connecting member. The connecting member and the dipole are so shaped that when the dipole is inserted longitudinally it is wedged in the connecting member by this longitudinal movement, the frictional engaging surfaces extending substantially parallel to the axis of the dipole and the frictional wedging force being directed at a substantial angle to the axis of the dipole.

Consequently, the only way in which the dipole may be loosened from its connecting member is by an outward pull parallel to the axis of the dipole. Wind vibration or other forces which may cause the dipole to vibrate have a component in a direction extending at some angle to the axis of the dipole and usually at right angles thereto.

Consequently, such vibrational forces would not have a loosening effect on the dipole. In addition, the inner end of the dipole has a longitudinal slot preferably extending parallel to the axis of the dipole and engageable under the head of a bolt carried by the connecting member, the bolt being preferably provided with a wing nut and a lock washer to tighten the bolt down on the end of the dipole.

Thus, in connecting a dipole end to my novel connecting member, the end of the dipole need merely be slid into the end of the connector and

3

pushed tightly therein so that the end of the slot moves under the head of the bolt on the connector; the wing nut is then tightened.

Therefore, each dipole end requires two simple operations for connection: (1) an inward push into the connector as far as it will go, and (2) the tightening of the wing nut. Each such operation requires but a few seconds so that an entire antenna interceptor and reflector structure may be assembled even by the unskilled user within less than a minute.

The mechanical connector for the dipole may be provided with an additional opening preferably adjacent the end thereof opposite that into which the dipole is inserted through which a bolt may be passed for connection to a lead-in wire; so that the only other operation required after erection of the antenna is to connect the lead-in wire to this bolt, on each side of the dipole.

My invention may take many forms, but its essential element is the provision of means for wedging the dipole end in position by longitudinal movement combined with a simple operable securing means; and further combined, if desired, with simplified means on the connecting element itself for connection to a lead-in wire.

The foregoing and many other objects of my invention will become apparent in the following description and drawings in which:

Figure 1 is a view in perspective showing my novel antenna structure.

Figure 2 is an exploded view in perspective showing my novel connector structure.

Figure 3 is a top plan view of the connector of Figures 1 and 2.

Figure 4 is a side view of the connectors of Figures 1, 2, and 3.

Figure 5 is a view in perspective showing a modified form of the connector of Figures 1 to 4.

Referring first to Figure 1, a vertical mast 10 carries secured thereto cross arm 11 which preferably is a tubular metallic cross arm in order to obtain sufficient structural strength.

The cross arm 11 carries clamping channel 12 having the V-shaped notches 13, 13 which are aligned vertically to engage the mast 10. A U-shaped bolt 14 is arranged to surround the mast 10, the legs of the U-shaped bolt 14 passing through openings 15 in the cross arm 11 and through similarly aligned openings in the channel 12.

The legs of the U-shaped bolt 14 may then be drawn in and tightened by the nuts 16 on the threaded ends of the legs of the U-shaped bolt 14. The tightening of the nuts 16 draws the U-shaped bolt 14 toward the base of the channel 12 making a clear space between V-shaped notches 13 and the bend of the U 14 smaller until the mast 10 is tightly clamped.

This particular securing or integrating member for connecting the cross arm 11 to the mast 10 forms no part of my present invention but is described and shown herein only for the sake of completeness. Any suitable means may be used to obtain this interconnection between the cross arm 11 and the mast 10.

The ends of the cross arm 11 are collapsed at 20, 21 to provide a flat surface on which the interceptor dipole and the reflector dipole may be mounted.

In Figure 1 there is shown a folded dipole for interception of the high frequency waves. The folded dipole 25 comprises the pair of metallic tubes 26, 27 bent into a U-shape and collapsed, respectively, at their ends 28, 29 and 30, 31.

4

The ends 28 and 29 of the U-shaped section 26 and the ends 30, 31 of the U-shaped section 27 are collapsed in such manner as to produce a relatively flat center 35 and longitudinally extending lateral ribs 36, 37. (See also Figures 2 and 4.)

The tube end 28 illustrated in Figures 2 and 4 and the other tube ends as well are also so collapsed as to produce the chamfered connection 40 at each side between the body of the tube and the lateral longitudinally extending ribs 36, 37.

The end of the tube at the flat section 35 is provided in each case with the longitudinally extending slot 42 communicating with the end of the tube and open thereat.

Each of the connecting elements 45 is provided with a pair of parallel side walls 46, 47 extending substantially parallel to the axis of the connector and substantially parallel to the axis of the tube to be inserted therein.

However, the walls 46 and 47 taper toward each other so that the space between them at end 48 of the connector is narrower than the space between them at end 50 of the connector. The ribs 36, 37 at the end 28 of the tube are spaced apart so that their outer transverse dimension is less than the distance between the parallel walls 46, 47 of the connector 45 at end 50 but is greater than the distance between the walls 46, 47 at end 48.

As a matter of fact, the walls 46, 47 taper together quite close to the end 50 to a degree where they will tightly engage the ribs 36, 37.

The ribs 36, 37 of the tube end 28 in essence form an I beam with the tube section 35 and are substantially incompressible.

The walls 46, 47 of the connector 45 are of relatively strong metal; but are sufficiently resilient so that they may be resiliently spread by the insertion of the tube end 28 therebetween with sufficient force and owing to their resilience will frictionally engage tightly against the sides of ribs 36 and 37.

In addition, the connector 45 is provided with the bent-up wall 52 adjacent the end 50, the said wall 52 having the horizontal slot 53 to permit passage therinto of the flat section 35 of end 28 of tube 26, the tube 26 being taken by way of example and being representative of the other tubes.

Communicating with the flat horizontal slot 53 are the vertical slots 54, 54 in the bent-up wall 52. These vertical slots 54 are dimensioned so that they will readily receive the ribs 36 and 37 and permit the entire unit thereby to be inserted into the connector 45.

They are, however, so dimensioned that the chamfered portions 40 of the ribs 36 and 37 which connect them with the tube 26 can slide in only part way before engaging in tight frictional engagement with the material defining the vertical slots 54, 54.

The force necessary to push the tube end home in the connector will result in a slight deformation of the portion of the wall 52 defining the slots 54 as they are forced up onto the chamfered portions 40 of the tube 26. This deformation is also a resilient one creating a line frictional engagement at substantial pressure which serves to anchor the tube in place.

As the tube end 28 is pushed home, the slot 42 moves under the head of bolt 60 which passes through opening 61. Bolt 60 may be tightened in place by the wing nut 62, and an appropriate

lock washer may be used. This serves mechanically to anchor the tube end in place.

By this means, therefore, any lateral vibrating force transverse to the axis of tube 26 will have no component of force tending to loosen the tube 26 from the connector 45.

This is so because the only direction in which the tube may be pushed to loosen the same is in a direction parallel to the axis thereof, and no vibrating force to which the tube may reasonably be subjected will have a component in that direction. In addition, the bolt 60 and wing nut 62 provide a secure mechanical arrangement.

Thus, in order to anchor the tube 26 in the connector, it is necessary only to insert the flattened end thereof through the composite slot 54, 53, 54, pushing the tube through said slot until the slot 42 of the tube moves under the head of bolt 60.

This is accomplished by a single motion. The second operation to complete the connection is that of tightening the wing nut 62; and the mechanical connection is thereupon fully completed.

Since the connector is metallic, it may be made of suitably conductive material and provide an appropriate means of securement for a lead-in wire. This means of securement for the lead-in wire is provided at end 48 of the connector 45 by the opening 65, the bolt 66 passing through the opening and the nut 67 which provide a means for securing the terminal lug of the lead-in wire or the lead-in wire itself to the end 48 of the connector 45.

While Figures 1 to 4 show the preferred form of my novel connector, it will be obvious that it may assume many other shapes within the principles of my invention.

Thus, in Figure 5 I have shown a modified form of connector 145 having the opening 161 to receive a bolt and wing nut assembly similar to the bolt and wing nut assembly 60, 62 of Figure 2.

Instead of the parallel walls 46, 47 and the end wall 52 of the connector of Figure 2, I provide curled-over channel members 146, 147 in the connector 145. These will receive the ribs 36, 37 of the end 28 of tube 26, the chamfered portion of the tube pressing into the edges 200, 250 of the connector 145 when the tube is pushed home.

Here again the channels 146 and 147 may be tapered toward each other to provide a tight frictional resilient engagement of the ribs 36 and 37 in connection with the frictional engagement of the ends 200 of channels 146 and 147 on the chamfered surfaces 40 of the tube.

The other operations, as well as the advantages of the unit of Figure 5, are substantially the same as those previously described in connection with the unit of Figures 1 to 4.

In Figures 1 and 2 I have shown a preferred manner in which the connector may be embodied commercially for use in connection with the antenna structure.

An insulating plate or bracket 90 is provided with longitudinally aligned openings 91, 92, 91a, 92a. A connector 45 is secured to the pair of openings 91-92, and another connector 45 reversed 180° is secured to the aligned openings 91a, 92a.

Bolt 66 passes through opening 92 of the insulating bracket 90 and opening 65 of the connector 45, the connector being, therefore, held in place by the bolt 66 and the nut 67. Bolt 60 passes through opening 61 of the connector and aligned

opening 91 of the insulating bracket 90 where it is held in place by the wing nut 62.

Wing nut 62 need not be removed from the bolt 60 in order to provide for securement of the antenna thereto as previously described since the slot 42 simply slides under the head of bolt 60. Bolt 66 need not be removed completely but need merely be loosened in order to provide for the insertion under the head thereof of an antenna lead-in connector clip or of a turn or two of the lead-in wire itself.

Where the connector clip is a full annular clip, then, of course, the bolt 66 must be temporarily removed to slide the clip over the same. The connection of the lead-in wire may, if desired, be made at the factory for standard lengths since the lead-in wire may readily be coiled up and will not interfere with the arrangement of the antenna structure in a small package for shipment.

The antenna parts, however, are disconnected during shipment and are inserted in position by the simple method previously described.

The insulating plate or bracket 90 is also provided with a pair of transversely aligned openings 95, 96 for securement to the collapsed end 20 of cross arm 11, that is, a pair of bolts 97, 98 are passed through openings 96, 95 and appropriately spaced openings in the collapsed end 20 of cross arm 11 and are held in place by nuts.

Thus, where a straight dipole is used, the only operation required in assembly is to pass the bolts 97, 98 through openings 96, 95 and then through the aligned openings in the collapsed end 20 of cross arm 11 and secure them in place by nuts. The two dipoles are then forced into the opposite connectors 45 and secured in position as previously described.

This is also true in the case of a folded dipole, the ends of the dipole being sufficiently flexible and the relative amount of movement being such as to permit this kind of connection to be made.

Where, however, the folded dipole is too rigid to permit this to be done or where the folded dipole is a large one for use primarily on relatively low frequencies, then the folded dipole is shipped in two parts 26, 27 each bent in U-shaped form as shown in Figure 1.

In this case, a U-shaped bracket 100 is secured to the top of the insulating bracket 90 (on the side opposite the securement of bracket 92 on the cross arm 11 so that bracket 100 will be insulated therefrom) by the bolts 97, 98.

A connecting plate 190 of metal is secured by bolts 191, 192 and nuts 193, 194 to the upper leg of the bracket 100. The connecting plate 190 carries the upper pair of connectors 45 identical with the connectors 45 carried by the lower bracket 90.

The two ends 28, 29 of the U-shaped tube 26 are pushed in simultaneously in the upper and lower brackets on the right side of Figure 1 and the two ends 30 and 31 of the U-shaped tube 27 are pushed in simultaneously in the upper and lower connectors 45, 45 on the left side of Figure 1. The metallic strip 190 serves to complete the folded dipole at its upper leg.

The base of the bracket 100 is, of course, spaced from the inner ends of the lower connectors 45, 45 so that the dipole is not short circuited.

The reflecting antenna 225 comprises a pair of tubes 226, 227 shaped at their inner ends 231, 229 to correspond exactly with the shape shown for the tube 26 of Figure 2. The connectors 45 are mounted on a rear metallic plate 290 secured to the collapsed rear end 21 of the cross arm 11

by the bolts 291, 292 passing through appropriate openings in the collapsed end 21 of the cross arm 11 and being held in place by appropriate nuts.

An insulating bracket similar to the bracket 90 may be used, where desired, but for utilization as a reflecting antenna it is preferred that the reflector 225 be a single cross bar electrically in engagement with the cross arm 11 and the mast 10.

By this means, therefore, it will be seen that a simplified easily set up antenna structure is provided.

The antenna structure may be shipped with the cross arm 11 disconnected from the mast 10 and with all other parts disconnected to be connected and set up by the user or serviceman.

Where the antenna is sold through such outlets that it is expected that the actual erector of the antenna will be the home user himself, then preferably the cross arm 11 has secured thereto the insulating bracket 90, the bracket 100, and the bracket 190 at the front end and at the opposite end the bracket 290 together with the six connectors normally carried thereby.

Since the bracket 90 need be no more than of the order of six inches long, the maximum width of the package in one plane need be no more than six inches and the other elements of the antenna, of course, may be appropriately nested in the package.

Where the package is to be flattened to say a maximum width of one inch, then, of course, brackets 90, 190, and 290 must be disconnected from the cross arm.

When, however, the home user receives the cross arm 11 with the brackets thereon, the only operation he must perform is to push the ends of the dipoles into the connectors and tighten the wing nuts.

If the lead-in wire has not already been connected to bolts 66, then, of course, they should be connected to these bolts or they may even be connected under the wing nuts to bolts 60 where required.

Thus, to connect the dipoles to the cross arm the only operation that need be performed is the single longitudinal movement of each dipole into its connector and the tightening of the wing nut.

This is the essence of my invention.

In addition, the simplified means provided for connecting the lead-in wire makes such a connection obvious and easily performed.

The connectors may be delivered mounted on their appropriate brackets so that where the brackets must be disconnected from the cross arm to facilitate shipment it is only necessary to pass a pair of bolts through aligned openings of the bracket and the cross arm to connect the bracket to the cross arm.

By this means, therefore, an antenna structure is provided which may be readily and quickly erected and locked in position which is mechanically strong enough to survive weathering and wind forces and which will not be disrupted by vibrational forces.

In the foregoing I have described my invention solely in connection with specific illustrative embodiments thereof. Since many variations and modifications of my invention will now be obvious to those skilled in the art, I prefer to be bound not by the specific disclosures herein contained but only by the appended claims.

I claim:

1. In a television antenna having a mast, a cross arm secured thereto; a support member

carried by said cross-arm; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said flat section of said antenna having an open ended slot at its free end; said connector having a bolt head; said open ended slot being movable under said bolt head; and means for tightening said bolt head upon the material defining said slot and a lead-in connection element for said connector.

2. In a television antenna having a mast, a cross arm secured thereto; a support member carried by said cross arm; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections, and a section between each rib and the main body of the antenna increasing gradually in cross-section toward the main body of the antenna; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said connector having a third wall at the first-mentioned end; said wall being slotted to receive the flat section and the rib sections of the antenna; said slotted wall engaging frictionally and in locking relation with the sections of gradually increasing width between each rib and the antenna body; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

3. In a television antenna having a mast, a cross arm secured thereto; a support member carried by said cross arm; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; an antenna member comprising a substantially tubular unit having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between

the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

4. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said flat section of said antenna having an open ended slot at its free end; said connector having a bolt head; said open ended slot being movable under said bolt head; and means for tightening said bolt head upon the material defining said slot and a lead-in connection element for said connector.

5. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said flat section of said antenna having an open ended slot at its free end; said connector having a bolt head; said open ended slot being movable under said bolt head; and means for tightening said bolt head upon the material defining said slot.

6. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end

and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said flat section of said antenna having an open ended slot at its free end; said connector having a bolt head; said open ended slot being movable under said bolt head.

7. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said wall sections being curved transversely to receive said rib sections; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

8. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections, and a section between each rib and the main body of the antenna increasing gradually in cross-section toward the main body of the antenna; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said wall sections being curved transversely to frictionally engage said sections of gradually increasing width between each rib and the antenna body; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

9. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections, and a section between each rib and the main body of the antenna increasing gradually in cross-section toward the main body of the antenna; said end of said antenna member being insertable by longitudinal movement into said

11

first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said connector having a third wall at the first-mentioned end; said wall being slotted to receive the flat section and the rib sections of the antenna; said slotted wall engaging frictionally and in locking relation with the sections of gradually increasing width between each rib and the antenna body; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

10. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections, and a section between each rib and the main body of the antenna increasing gradually in cross-section toward the main body of the antenna; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; said connector having a third wall at the first-mentioned end; said wall being slotted to receive the flat section and the rib sections of the antenna; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

11. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections, and a section between each rib and the main body of the antenna increasing gradually in cross-section toward the main body of the antenna; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

12. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward

12

each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

13. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; an antenna member comprising a substantially tubular unit having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement; and additional securing means connecting together the flat section of the antenna member and the flat section of the connector.

14. In a television antenna structure comprising a support member; a connector carried by said support member; said connector comprising a substantially flat section and a pair of spaced wall sections extending substantially longitudinally of said flat section and tapering toward each other from a first end of the connector to the second end of the connector; a longitudinal antenna member having an end with a longitudinally extending flat section and a pair of spaced parallel longitudinally extending rib sections; said end of said antenna member being insertable by longitudinal movement into said first end of said connector; the wall members of the connector being spaced apart by more than the spacing between the rib sections at the first end and by less than the spacing between the rib sections at the second end; the end of the antenna being wedged in the connector by said longitudinal movement.

SIDNEY PARISER.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
265,716	Taylor	Oct. 10, 1882
402,132	Berry	Apr. 30, 1889
523,506	Barnes	July 24, 1894
873,625	Starrett	Dec. 10, 1907
2,463,124	Sims	Mar. 1, 1949
2,465,331	Resnick	Mar. 22, 1949
2,471,256	Wintermute	May 24, 1949