Jan. 4, 1955 C. L. ALLSWORTH ET AL 2,698,873

TOWER FOR TELEVISION AERIALS

Filed June 20, 1950

Fig. 2.

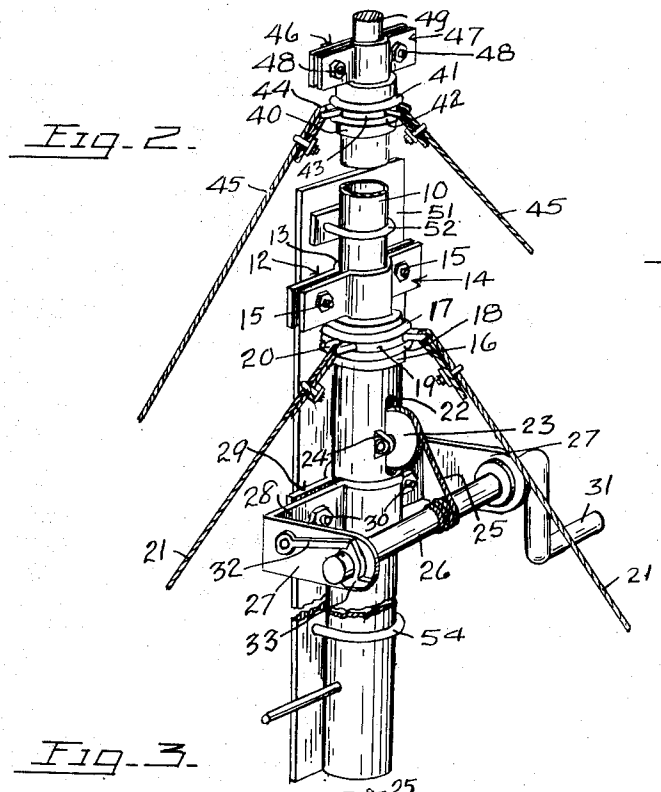


Fig. 3.

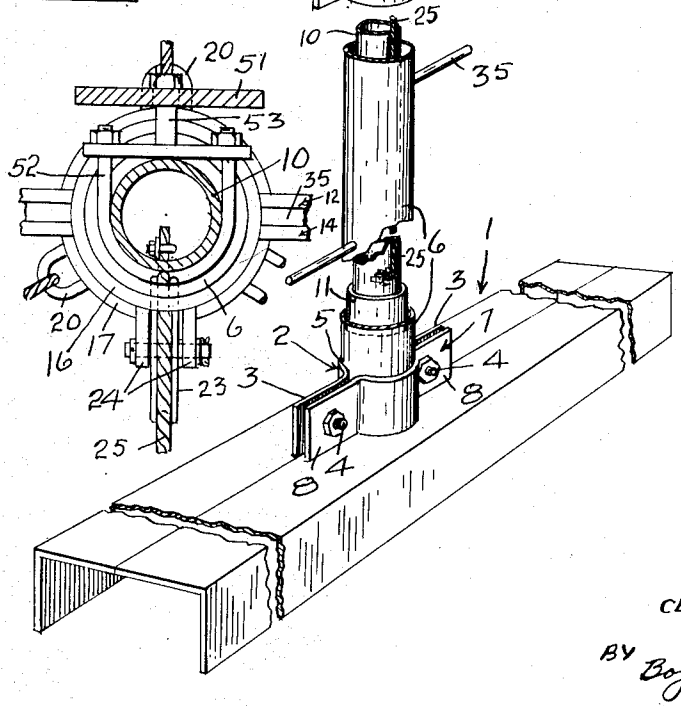
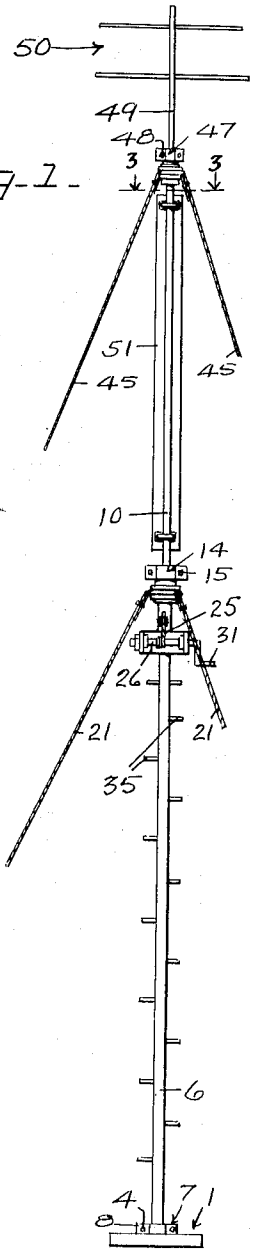


Fig. 1.



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United States Patent Office

2,698,873

Patented Jan. 4, 1955

2,698,873

TOWER FOR TELEVISION AERIALS

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Application June 20, 1950, Serial No. 169,236

2 Claims. (Cl. 174—45)

This invention relates to a tower for a television aerial and has for its principal object the provision of a tower that is economical to make and to install and that is compact and rugged.

The installation of aerials for television sets in certain localities presents a very difficult problem for the reason that the band where reception is best may be relatively far above the ground and at a critical level. The level where reception is best may be considerably above the top of the house in which the receiver is located, and it may be within a narrow band of a few feet or less in vertical width.

One of the objects of the present invention is the provision of a compact tower of relatively few parts that is economical to make and to erect and that is adapted to carry the aerial to exactly the desired level where it can be rigidly held.

Heretofore, where a tower is required for the aerial, it has been the practice to build such tower along conventional structural lines, using a lattice work of structural steel braces in much the same manner as the towers or masts of the ordinary radio or wireless sending station are constructed, except on a smaller scale. The expense and time required for constructing such a tower are prohibitive in most instances, and the prospective users of television sets either tolerate inferior reception or forego the purchase of a television set until the time when the problem of installing an aerial capable of effecting proper reception is overcome.

Even when the conventional towers are installed, the difficulty exists of determining where the tower is to end in order to position the aerial at the desired level. The tower may be designed for supporting an aerial at say a thirty foot level but it may be found, after erection, that the proper level is about twenty feet. Or it may be found that the desired level is about forty feet after a twenty or thirty foot tower is erected. In many such instances, the builders complete the tower according to the original estimate, with the result that the user obtains inferior reception in the belief that better reception is impossible in his particular locality.

With the present invention, the aerial may be easily positioned by a single person at exactly the correct level, which may be quite high above the ground. Also, the elevation of the aerial may be easily changed to meet changing conditions of reception without removing or adding parts.

In the drawings, Fig. 1 is a reduced elevational view of the tower, the stay wires being broken in length.

Fig. 2 is an enlarged perspective view of the tower, sections being removed to accommodate the view to the sheet and the elements being in cross section where the sections are removed. The stay wires are broken away and the aerial itself is not shown.

The tower of Fig. 2 is collapsed, whereas that of Fig. 1 is extended.

Fig. 3 is an enlarged cross sectional view taken about on line 3—3 of Fig. 1.

In detail, the invention as illustrated in the drawings comprises a base 1 that may be an inverted channel strip of structural steel, or that may be formed from a pair of angle iron strips welded together, as indicated. This base is adapted to be imbedded in the ground or in a concrete base (not shown). In actual practice, it has been found that a base 1 of about a foot and a half or two feet in length and of about four inches in width is satisfactory for the sizes of other parts that will later

be described where the tower, when at its fullest height is about forty to fifty feet in height.

Welded to base 1 centrally between its ends is a half clamp 2 having wings 3 at its ends for the passage of bolts 4. This half clamp 2 has a laterally curved central portion 5 that is adapted to partially encircle the lower end of a vertical cylindrical and tubular lower post 6.

The other half 7 of the clamp is complementary to half 2 and has wings 8 apertured for passage of bolts 4. The half 7 is free for removal from the base and for movement toward half 2.

Upon setting the lower end of the lower post 6 on base 1 and positioned in the curved recess formed by central portion 5 of the half 2 of the clamp, the said lower end will be rigidly secured to said base by bolting the half 7 to half 2.

The lower post 6 may be of ordinary two inch iron water pipe and may be forty or more feet in length, although it is obvious that the pipe may be of any desired metal or alloy. An upper post 10 is telescopically slidable through the open upper end of post 6. Post 10 may be of standard inch and a quarter iron pipe and the length of this upper post may be twenty feet or more. The standard length of each post 6, 10 is about twenty or twenty-one feet, but the present invention is not intended to be restricted to any precise length.

A collar or sleeve 11 is secured to the lower end of the upper post 10, and this sleeve will function as a bearing for spacing the post 10 within post 6.

The upper end of the lower post 6 may have a half clamp 12 rigidly secured thereto, which half clamp is identical with the half clamp 2, except that the central laterally opening recess 13 is smaller for receiving the smaller post 10. A half clamp 14 complementary to half clamp 12 is releasably bolted by bolts 15 to half clamp 12 for clamping the lower or inner post 10 at any desired degree of extension upwardly from post 6, and for supporting the upper post by the lower post 6 at the upper end of the latter.

The said half clamp 12 may be carried on a sleeve 16 that is threadedly secured to the upper end of post 6.

Sleeve 16 also has a pair of vertically spaced rings 17, 18 secured thereto below the above mentioned clamp elements. Between said rings 17, 18 is a ring 19 that is rotatable about the axis of the post 6. This ring 19 has outwardly projecting eye members 20 secured thereto at three equally spaced points for attachment of stay cables or wires 21 thereto. These cables may be secured at their lower ends to the ground by deadmen sunk in the ground in the same manner as telephone pole stay wires are held, or they may be secured to posts held in the ground or in any other suitable manner for holding the post upright, such as by attachment of buildings, etc.

A vertical slot 22 is formed in the upper end of lower post 6 at a point spaced several inches below the sleeve 16. A pulley 23 extends into said slot, said pulley being rotatably supported on the lower post by a shaft that, in turn, is supported in bearings 24 on the post at opposite sides of the pulley.

A cable 25 extends over pulley 23 (which pulley is preferably formed with a peripheral outwardly opening channel for the cable), and into the space between the upper post 10 and the lower post 6. This cable is secured at one end to the lower end of the upper post 10 by a cable clamp or by any other suitable means, and at its other end it is secured to a windlass 26 that is positioned outside post 6 and below pulley 23.

The windlass 26 is preferably supported for rotation in bracket arms 27. These arms 27 are at the ends of a half clamp 28, the latter being releasably secured to the post 6 by a second half clamp 29. The halves 28, 29 extend across opposite sides of the post 6 and are bolted together by bolts 30. While the windlass 26 may be positioned at the lower end of post 6 it is preferably positioned adjacent the upper end of said post so that an operator in a position on post 6 to tighten clamp halves 12, 13 may operate the windlass without changing his position.

A handle 31 is on the windlass for operation of the same, and a pawl 32 is pivotally secured to one of the

bracket arms 27 for engaging the teeth of a ratchet wheel 33 that, in turn, is secured on the windlass shaft for preventing reverse rotation of the windlass, except when the pawl is lifted.

The lower post 6 is provided with radially projecting rods 35 providing a ladder for climbing the lower post to a point where the clamp halves 12, 14 can be tightened, and from which point the windlass can be operated. The rods 35 are preferably at opposite sides of the lower post in staggered relationship, except for the top two rods, which are opposite each other, as seen in Fig. 1.

The upper post 10 is provided at its upper end with a sleeve 40 that is the same as sleeve 16 except that it is smaller for the smaller post 10. Sleeve 40 is preferably threaded on the upper end of post 10 and has vertically spaced rings 41, 42 secured thereto for holding a loose ring 43 therebetween, which ring 43 is adapted to rotate on the axis of the upper post.

Ring 43 has three equally spaced outwardly projecting eye members 44 secured thereto for stay wires 45 that, in turn, are adapted to be secured at their lower ends to the ground or deadmen, or to other suitable holding means for holding the post upright.

Secured to the upper end of the sleeve 40 is a half clamp 46 that is identical with the half clamp 12, except that it is smaller. A complementarily formed half clamp 47 is adapted to be removably secured by bolts 48 to the half clamp 46 for securing the post 49 of a conventional television aerial 50 thereto. The post 49 is telescopically slidable into the upper end of the upper post 10 and may be of any desired length, but preferably not longer than post 10.

In many instances, it is desirable to secure the conductor leading from the television aerial to an electrical insulator on the upper post before leading the conductor to the building in which the receiving set is located. Such an insulator is provided in the form of a strip 51 of relatively rigid electrical insulation material. This strip may be clamped to the upper end of the upper post 10 by a U-clamp 52 that in turn carries a spacer 53 (Fig. 3) that secures the strip 51 to the U-clamp and at the same time spaces the strip a sufficient distance from the post 10 to enable the lower end of the strip to slide over the rings and clamp elements carried by the upper end of the lower post 6 should the upper post be only partially extended. A U-clamp 54 is adapted to releasably secure the lower end of the strip 51 to post 6 after post 10 is in its finally adjusted position, in the event the post 10 projects upwardly from post 6 a sufficient distance to carry the lower end of strip 51 to a point above the upper end of post 6 (Fig. 1) or in the event a relatively short strip 51 is all that is required.

The width of strip 51 is such as not to interfere with the stay wires, or cables 21 although it is obvious that the ring to which the said cables are connected may be rotated about post 6 to the most desirable position. Preferably the strip 51 is of a material that may receive staples for stapling the conductor thereto. Wood has been found to be satisfactory.

The posts 6, 10 and the entire assembly may be carried in collapsed position to the site where the tower is to be erected, and when the base 1 is set in the desired position the stay cables 21 may be anchored to hold the collapsed post assembly upright. The operator may next climb the post 6 to a point adjacent the windlass 26. The receiving set may then be connected with the aerial in the conventional manner, and the operator from his position at the upper end of the lower post 6 will commence to actuate the windlass for elevating the upper post, and the aerial thereon. When tests on the receiver show that the aerial has reached the height of maximum efficiency the clamp half 14 is tightened and the stay wires 45 are anchored. The conductor from the aerial to the house is secured to the lower end of the insulation strip and the said strip is secured in place to either the upper or lower post. This completes the job, and the complete installation can be effected in a small fraction of the time required to set up the ordinary tower of structural steel members and at a small fraction of the cost. Should the operator fully extend the post 6 and still greater elevation is required, the upper post may be lowered to the point where the operator may loosen the clamp half 47 and elevate the aerial post. The aerial post may then be secured to the upper post in its extended position, and thereafter the said upper post may be elevated the desired distance in the manner described. More posts may be employed but usually the number as illustrated and as described is adequate.

It is understood that the invention is not to be limited to the precise structure above described in detail, inasmuch as the structure so shown and described is merely the preferred structure.

We claim:

1. A tower for a television aerial comprising a vertical tubular lower post, a vertical tubular upper post telescopically slidable through the upper end of said lower post from a collapsed position substantially wholly enclosed within said lower post to any desired degree of elevation projecting from said upper end, a strip of electrical insulation material secured to said upper post and alongside the same and movable therewith over the outer side of said lower post longitudinally of the latter, means on the upper end of said upper post for securing a television aerial thereto, said strip of insulation material being adapted for securing the conductor for said aerial thereto.

2. A tower for a television aerial comprising a vertical tubular lower post, a vertical tubular upper post telescopically slidable through the upper end of said lower post from a collapsed position substantially wholly enclosed within said lower post to any desired degree of elevation projecting from said upper end, a strip of electrical insulation material secured to said upper post and alongside the same and movable therewith over the outer side of said lower post, longitudinally of the latter, means on the upper end of said upper post for securing a television aerial thereto, said strip of insulation material being adapted for securing the conductor for said aerial thereto, and means for releasably securing said strip to said lower post.

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