Sept. 4, 1956 H. M. ANDERSON 2,761,531

SECTIONAL MAST

Filed Feb. 19, 1951 2 Sheets-Sheet 1

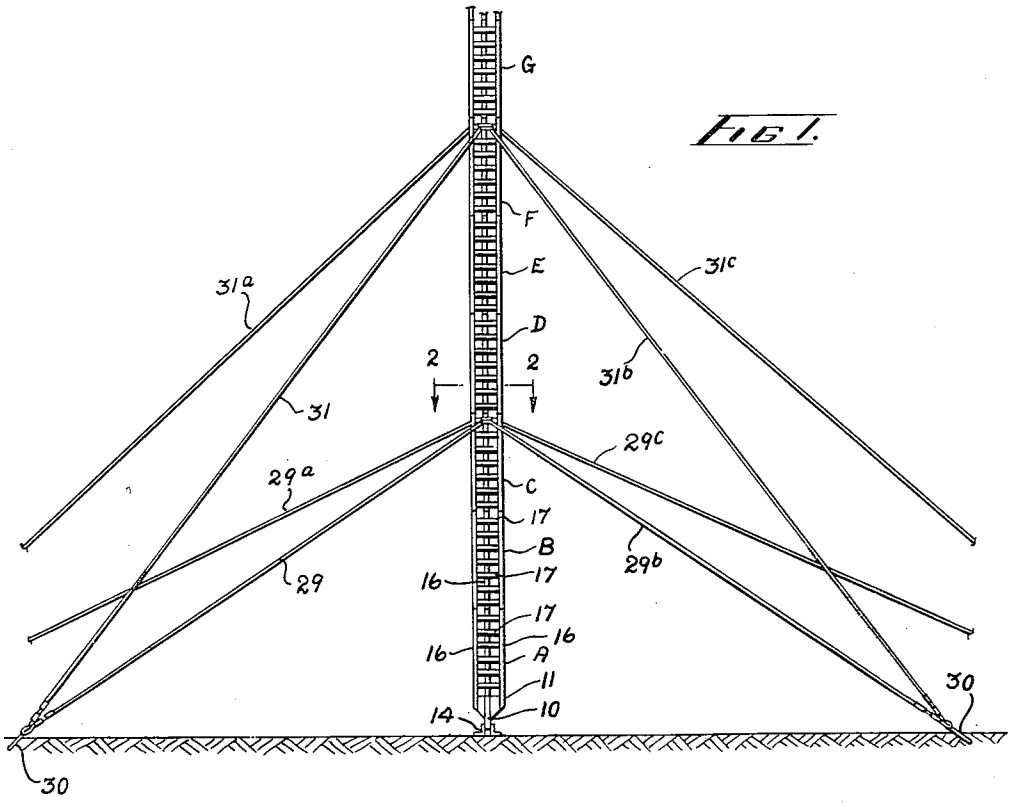


FIG 1.

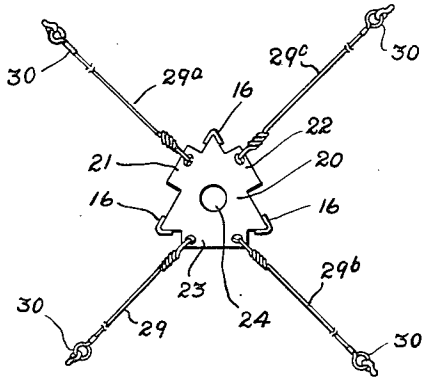


FIG 2.

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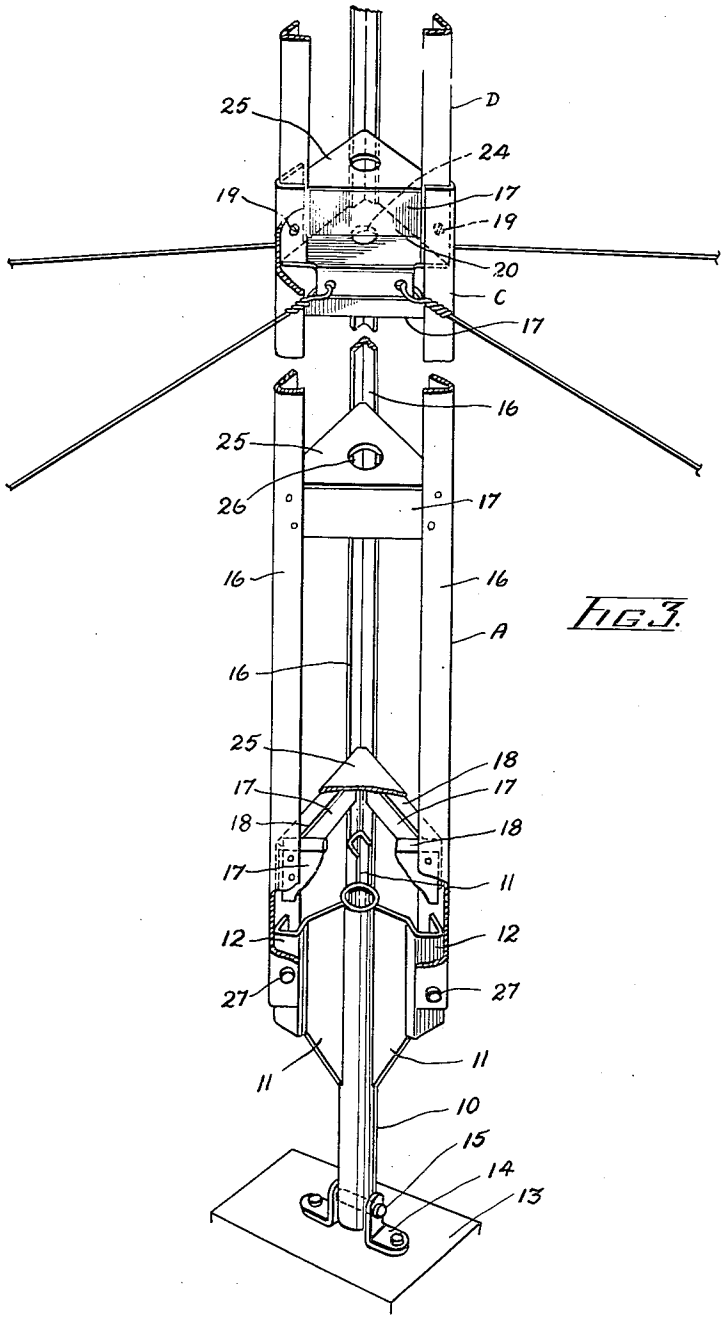


FIG. 3.

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SECTIONAL MAST

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5 Claims. (Cl. 189—26)

This invention relates to a mast which is particularly adapted for supporting a television antenna at the required height for reception in the zone where the television receiver is located.

It is known that television waves travel in a straight line and do not follow the earth's curvature. Thus, the maximum distance at which the receiving station can be located from the broadcast station, without making special provision for elevating the receiving antenna, is relatively small. By elevating the receiving antenna, receiving stations that are located on fringe of the normal range of the broadcast station or beyond the range may be brought within the range of the broadcast station. There are, of course, obvious limits to which the antenna may be elevated.

The principal objects of this invention are to provide a mast for a television antenna which is light in weight; inexpensive to manufacture; easily transported to the site on which it is to be erected, quickly and easily erected on the site; very rigid and strong.

It will be apparent, of course, that the mast will have other uses and accordingly it is to be understood that reference to its use as a mast for a television antenna is for the sole purpose of illustrating the construction of the same and is not to be construed as a limitation thereof.

For an understanding of the invention reference is to be had to the following description and accompanying drawings in which:

Figure 1 is an elevation of a sectional mast built up in situ from individual sections or units in accordance with this invention.

Figure 2 is cross section on the line 2—2 Fig. 1.

Figure 3 is a fragmentary elevation of the mast shown in Fig. 1, but on a large scale.

The television mast illustrated in Fig. 1 is formed of a plurality of units which are connected together in the manner hereinafter described to form a television mast of a predetermined height. It has been determined that the most suitable length of each unit is 10' (ten feet) and each side approximately 10" wide but the invention is not limited to those particular dimensions. Referring to Fig. 1, it will be seen that the mast shown consists of sectional units A, B, C, D, E, F, and G, each being identical in construction and interchangeable one with the other. The construction of these units will be described subsequently. The height of the mast may be varied as required by adding additional units or using less than the number shown. It is felt, however, that the number illustrated is sufficient to provide an understanding of the invention.

Referring first to Figs. 1 and 3, it will be seen that the mast is supported on base which comprises a tubular post 10 to which is attached three one piece brackets 11 projecting radially therefrom post 10 at equally spaced intervals. The outside free edge of each bracket is bent to form V-shaped vertical edge portion 12 to which the bottom unit A is attached in the manner hereinafter described. The post 10 is supported on a base plate 13 to which it is pivotally attached by means of bracket 14

and hinge pin 15 passing through the lower end of the post.

Each unit comprises three vertical girders 16 connected together by horizontal girts, 17. The girders are formed from angle iron so that each unit is V-shaped in cross section. The girders and girts are joined together by welding to form a very rigid unitary structure. The girts are formed with an inwardly projecting ledge 18 which serves as a stiffener as well as a support as hereinafter described. To obtain the desired rigidity for the mast, it is preferable to provide each unit with a plurality of girts arranged above each other at predetermined spaced intervals as shown. In the present illustration they are spaced 18¼ inches apart providing properly spaced rungs for the erector to ascend and descend the mast. The girts adjacent each end of each unit are spaced inwardly from the end so that the ends of adjacent units will fit into one another as shown in detail in Fig. 3. It will be seen that the lower end of the girders 16 of unit D telescopically fit inside the upper ends of the girders 16 of the unit C and are supported on the upper girts 17. To this end lower ends of the girders are closer together than at the top end, the distance being such as to permit the lower ends of the girders to fit inside the upper ends of the girders of the next lower unit. The ends of adjoining girders are connected together by bolts 19 entered through bolt holes which are in line when the lower end of one section rests on the girt of the next lower section. This makes it unnecessary for the erector to hold the section while placing bolts. This arrangement is carried out throughout the assembly of the mast. The lower end of the girders 16 of the bottom unit A of the mast fit over the V-shaped portions 12 and are connected thereto by bolts 27.

In order to support the mast in an upright position it is necessary to provide guy wires which can be attached to the mast at predetermined distances above ground level. For a mast of approximately 140 feet high, three sets of guy wires are sufficient, one at the top, one about 40 feet above ground level, and the third about midway between the two first mentioned. To attach the guys to the mast, there is provided a triangular shaped guy plate 20 which removably fits between the girders and is supported by the ledge 18 of girts 17. The guy plate plate 20 is formed with lateral extensions 21, 22, and 23 projecting beyond the sides of the plate. The extensions 21, 22 are each provided with a hole to receive one guy wire while the extension 23 has two holes so that two guy wires may be attached thereto. Each guy plate is formed with a centrally positioned hole 24. Attachable at any girt is a triangular shaped centering plate 25 which has a central hole 26 therethrough registering with the hole 24. The shank of the antenna or the shaft for rotating the antenna passes through the holes 24 and 26 which serve to centre the same and hold it in correct position. One centering plate for each unit will usually suffice.

The assembly of the mast on the site is a relatively simple operation. Having determined the number of units required, the first step is to join together several lengths which form the lower part of the mast, preferably up to where the first guy plate will be placed. This will be done with parts lying on the ground. The lower end will be attached to base which in turn is hingedly connected to the base plate 13. A guy plate 20 is placed in the top end of the top of the assembled units (unit C in the present illustration) and the lower set of guy ropes 29, 29*a*, 29*b*, and 29*c* attached thereto. A length of the shaft for rotating the antenna equal to the assembled part is placed in position and centered by centering plates 25. The assembled parts are then swung to a vertical position and the guy wires secured to anchors 30. The

erector then ascends the mast and step by step adds additional units until a mast of the desired height has been erected. As the erection advances, the erector adds centering plates, guy plates and antenna shaft as required, additional guy wires such as wires 31, 31*a*, 31*b* and 31*c* are attached and secured in place. When the last unit has been put in place, the top guy wires (not shown) are attached to the top guy plate and the anchors. The television antenna is then mounted in place and connected to the rotating shaft (not shown). Since other ways of erecting the mast and as the manner of erection erecting the same does not form part of the present invention, it is to be understood that the foregoing manner of erecting the mast is only given by way of illustrating one way in which it can be done.

Although the foregoing specification discloses a mast, triangular in cross section, it will be apparent that other shapes may be used, such as square in horizontal cross, but this, of course, would add to the weight and cost of the mast. Such modifications however are contemplated as being within the scope of the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A sectional mast comprising a plurality of detachable preformed, interchangeable units mounted on top of each other in end to end relationship, each unit comprising three uniformly spaced girders positioned equidistant from and substantially parallel to the vertical axis of the mast and parallel to each other, upper and lower horizontal girts connected to the girders adjacent the upper and lower ends thereof, each girder projecting above the upper girt and below the lower girt, the lower projecting end of one unit being smaller than the upper projecting girder end of the next lower unit whereby the lower projecting girder end fits inside the upper projecting girder end of a contiguous unit, the lower projecting ends of the girders engaging against the girts to support the units in superposed position, and a bolt locking the telescopically fitting ends together against vertical displacement.

2. A sectional mast comprising a plurality of detachable preformed, interchangeable units mounted on top of each other in end to end relationship, each unit comprising three uniformly spaced V-shaped girders positioned equi-distant from and substantially parallel to the vertical axis of the mast and parallel to each other, upper and lower horizontal girts permanently connected to the girders adjacent the upper and lower ends thereof, each

girder projecting above the upper girts and below the lower girts, the lower projecting end of one unit being smaller than the upper projecting girder end of the next lower unit whereby the lower projecting girder end telescopically fits into the upper projecting girder ends of the next lower unit, the lower projecting ends of the girders of the upper unit engaging against the upper girts of the lower unit to support the units in superposed position, and a bolt locking the telescopically fitting ends together against vertical displacement.

3. A sectional mast according to claim 1 wherein there is provided a plurality of centrally perforated centering plates located at predetermined positions throughout the heighth of the mast and supported by the said girts, said plates being held against a lateral movement by the girders.

4. A sectional mast according to claim 1 wherein there is provided removable guy plates positioned at predetermined points in the mast and supported by the said girts, said guy plates being held against a lateral movement by the girders.

5. A sectional mast according to claim 1 including a base member comprising a post, brackets extending radially from the post and arranged to register with and receive the lower ends of the girders of the lowermost unit and bolts securing said brackets and the said lower ends of the girders together.

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