July 8, 1958 F. R. SCHMITT 2,842,765

TELEVISION ANTENNA

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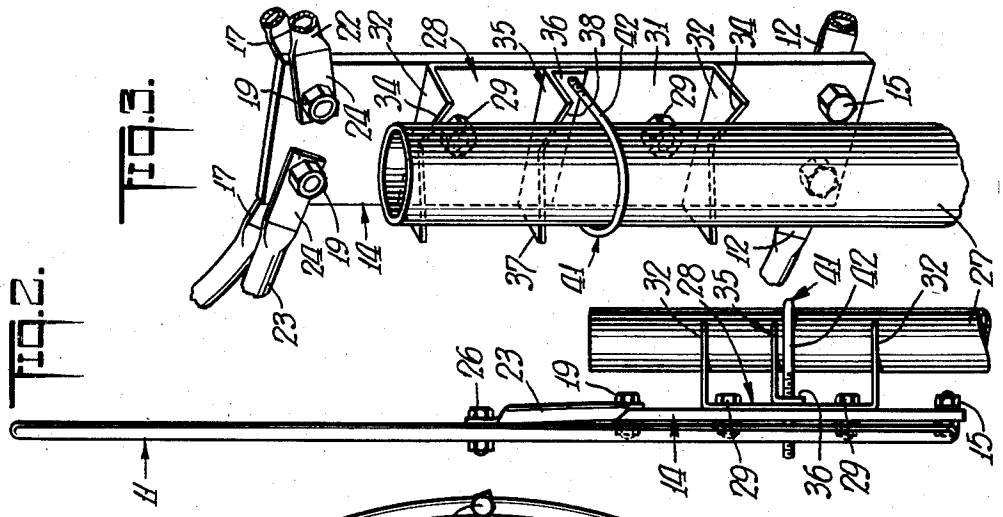


Fig. 3.

Fig. 2.

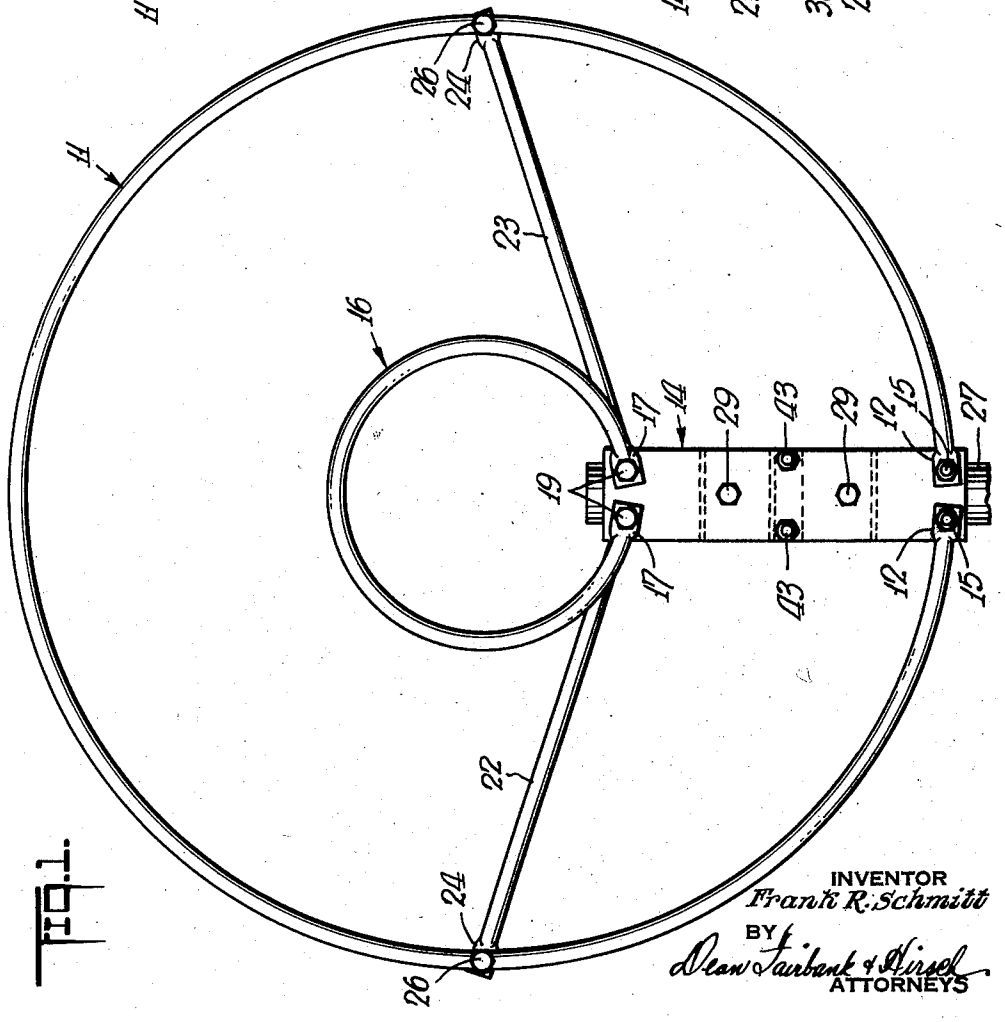


Fig. 1.

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TELEVISION ANTENNA

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This invention relates to television antenna, more particularly of the type to receive high and low frequency signals.

It is among the objects of the invention to provide a television antenna that is neat, compact and has but few inexpensive parts which may readily be assembled and are not likely to become deranged even after long use, which is highly responsive to incoming signals, which may readily be mounted and will withstand strong winds with a minimum of vibration and hence a minimum of distortion and wavering in the picture being viewed.

According to the invention the television antenna comprises a pair of substantially circular conductive frames, one of larger diameter than the other and both mounted on an insulating member so that they lie in substantially the same plane with the center of the smaller frame lying within the circumference of the larger frame.

In the accompanying drawings in which is shown one or more of various possible embodiments of the several features of the invention,

Fig. 1 is an elevational view of the antenna,

Fig. 2 is a side elevational view thereof, and

Fig. 3 is a perspective view on an enlarged scale of the antenna mount.

Referring now to the drawings, the television antenna desirably comprises a length of conductive material preferably tubular metal stock such as aluminum, bent into a substantially circular frame **11**, the ends **12** of which are desirably flattened.

Frame **11** is desirably mounted on one end of an insulating mount **14**, preferably a substantially rectangular plate of insulating material, which extends radially inward from frame **11** toward the center thereof. Although the frame may be mounted on the plate **14** in any suitable manner, it is preferred to use bolts **15** which extend through plate **14** and through aligned apertures in the flattened ends **12** of the frame **11**.

Also mounted on plate **14** so as to be substantially concentric with frame **11** is a frame **16** which also desirably comprises a length of tubular metal stock such as aluminum which is bent into substantially circular shape and has a diameter less than that of frame **11**. The adjacent ends **17** of frame **16** are also desirably flattened and are affixed to plate **14** by means of bolts **19**, which extend through aligned openings in ends **17** and the other end of the plate **14**, the frame **16** lying in substantially the same plane as frame **11**.

Associated with frames **11** and **16** are a pair of rods or struts **22** and **23** also desirably of tubular aluminum stock each of which desirably has flattened ends **24**. The ends **24** of rods **22** and **23** are affixed to plate **14** by the bolts **19** so that said rods are electrically connected to frame **16**. The rods **22** and **23** extend laterally outward from plate **14** in substantially opposed directions and the outer ends **24** of said rods are connected to the frame **11** as by bolts **26** which extend through aligned apertures in the flattened ends **24** and the frame **11**.

Means are desirably provided securely, yet removably to mount the antenna to a post **27**. To this end, a substantially U-shaped bracket **28**, which may also be of aluminum, is affixed to plate **14** as by bolts **29**, which extend through the base **31** of bracket **28** and through plate **14**. The ends **32** of bracket **28** are substantially parallel and extend outwardly from plate **14** at substantially right angles thereto, each of said ends **32** desirably having a substantially V-shaped notch **34** in the outer edge thereof. Desirably an angle member **35** is positioned on the base **31** of bracket **28** between the ends **32** thereof, the base **36** of angle member **35** resting on base **31** of bracket **28** and the outwardly extending portion **37** of angle member **35** extending parallel to ends **32** and having a substantially V-shaped notch **38** in the outer edge thereof.

In order securely to clamp the antenna to the post **27**, a U-bolt **41** is desirably provided lying in a plane substantially parallel to ends **32** of bracket **28** and outstanding member **37**. The legs **42** of the U-bolt **41** extend through aligned apertures in bases **36** and **31** and in plate **14**, being retained in place by means of nuts **43**.

Thus, when the post is positioned in the V-shaped notches of ends **32** and outstanding member **37**, encompassed by U-bolt **41**, by merely tightening the nuts **43**, the antenna will be securely mounted on said post.

In determining the dimensions of the frames **11** and **16** and the rods **22** and **23**, it has been found that in the low frequency range of television signals which may, for example, have an average frequency in the order of 58.5 megacycles, the length of the frame **11** should be approximately 101 inches which is equal to one-half wave length of the average frequency to be received by said frame. At the high frequency range of television signals which may, for example, have an average frequency in the order of 182.5 megacycles, the length of the frame **16** should be approximately 32.4 inches which is also equal to one-half wave length of the average frequency to be received by said frame. Rods **22** and **23**, which are connected to the frames **11** and **16**, are desirably 16.2 inches in length which is equal to one-quarter wave length of a frequency of 182.5 megacycles. The rods **22** and **23** intercept the frame **11** at a distance of 50.5 inches from the ends **12** thereof so that the length of the frame between each of the outer ends of rods **22** and **23** and the adjacent flattened ends **12** is equal to one-eighth wave length of the low frequency of 58.5 megacycles. With the construction thus described, the optimum length of one-half of the wave length of the signal to be received is provided for the frames **11** and **16** and this length is afforded in the minimum of space. In addition, the rods **22** and **23** which are electrically connected to the frame **16**, add a further one-half wave length to such frame so that the frame **16** and associated rods **22** and **23** are tuned to one wave length of the signal to be received which is conducive to high efficiency reception.

By reason of the rods **22** and **23**, not only is the efficiency of the antenna at a maximum for high frequency, which is generally more difficult to receive, but such rods reinforce the structure so that there will be but a minimum of vibration even in a strong wind and hence will avoid the distortion in the picture being viewed which usually occurs when a conventional elongated antenna having unreinforced free ends is used.

The clamp mount above described though simple in construction, will securely retain the antenna on a post, yet may readily be loosened by unscrewing the nuts **43** to permit removal of the antenna. By reason of the intermediate angle member **35**, when the U-bolt is tightened, there will be no bowing of the bracket **28** which might move the frames **11** and **16** out of the same plane with

possible distortion and reflections in the received signal.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A television antenna comprising an insulating mount, a substantially circular conductive frame having a pair of adjacent ends affixed to one end of said insulating mount and extending outwardly therefrom, said mount lying in substantially the same plane as said frame and extending radially inward toward the center thereof, a second substantially circular conductive frame also having a pair of adjacent ends affixed to said mount and extending outwardly therefrom near the inner end thereof, said second frame being of smaller diameter than said first frame and lying in substantially the same plane, said frames being clear of said mount except at the affixed ends thereof, a pair of conductive rods affixed at one end respectively to the adjacent ends of said smaller frame and extending in substantially opposite directions, said rods being affixed at their outer ends to the circumference of said larger frame.

2. The combination set forth in claim 1 in which said frames are each of length substantially equal to one half of the average wave length of the frequencies to be received thereby respectively, and said rods are affixed to said larger frame at a distance from the adjacent ends thereof respectively equal to one-eighth of the average wave length of the frequencies to be received by the larger frame.

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