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ANTENNA CONSTRUCTION

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Fig. 1

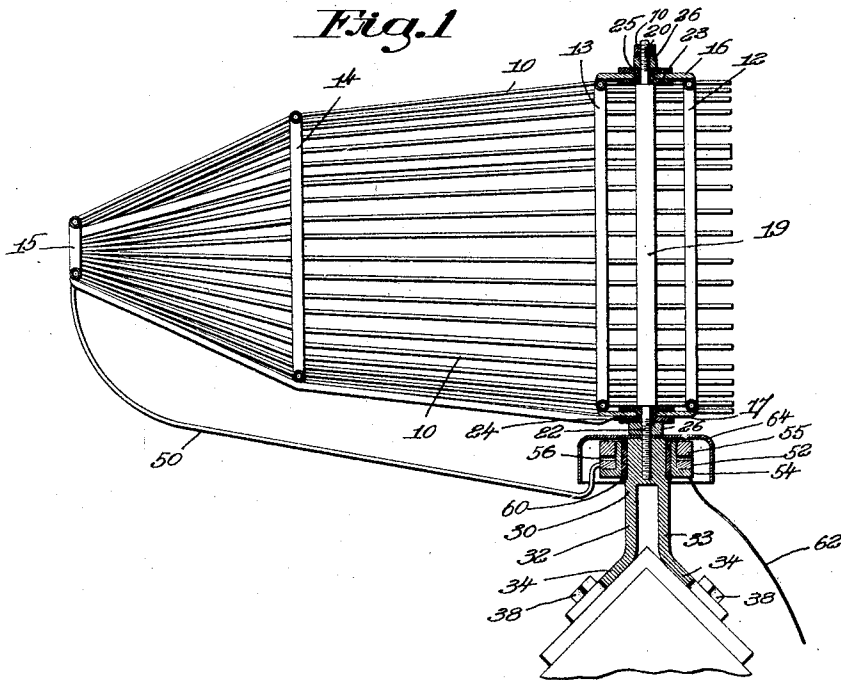
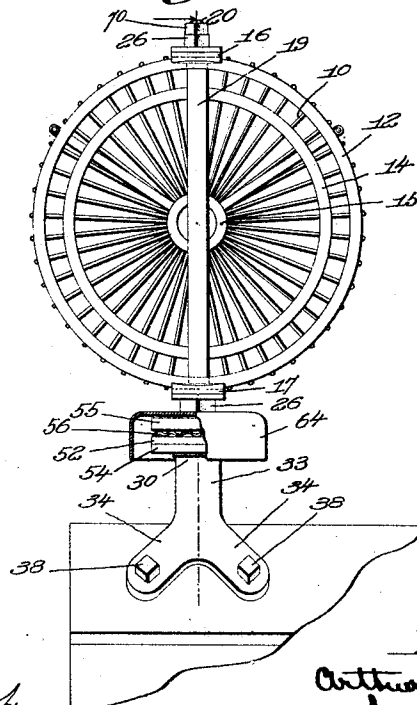


Fig. 2



Witness

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ANTENNA CONSTRUCTION

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The present invention relates to radio receiving apparatus and more particularly to a new and improved form of antenna construction employed in connection with such apparatus.

The usual forms of antenna employed in connection with receiving apparatus are cumbersome, require a large space for their erection, and if of sufficient length to afford the desired range of reception are not highly selective.

One object of the present invention is to provide a simple and compact form of antenna construction which compares well in receiving range with the most efficient type of existing antenna and which has a high degree of selectivity.

A further object of the invention is to provide a new and improved type of antenna construction, which, in addition to being highly selective, has a marked directional effect.

With these and other objects in view, the various features of the invention consist in certain novel features of construction, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawings illustrating the preferred form of the invention, Fig. 1 represents a sectional elevation of an antenna construction embodying the features of the invention; and Fig. 2 is an end view partly in section of the antenna shown in Fig. 1.

According to the present invention, the antenna has the general form of a tubular cage tapering to a restricted diameter at one end. The cage is surrounded by a series of antenna wires extending longitudinally of the cage and projecting beyond the cage at the large end. At the opposite small end of the cage, the antenna wires are connected to a common lead, which in turn is connected to the usual lead-in wire through a swivel coupling. The cage as a whole is supported to be revoluble about an axis adjacent the large end in order that the cage may be turned for maximum reception of incoming waves.

Referring to the illustrated embodiment of the invention, the antenna comprises essen-

tially a series of spaced wires 10 arranged in tubular formation about a series of supporting rings indicated at 12, 13, 14 and 15. As shown in Fig. 1, the rings are preferably made of copper tubing which is connected to the antenna wires in any suitable manner as by soldering. The rings 12 and 13 are positioned at the large end of the cage construction and the ring 15 of materially smaller diameter is positioned at the small end. The rings 12 and 13 positioned at the large end of the cage are connected by upper and lower supporting bars 16 and 17, which form swivel bearing members for the cage. The cage as a whole revolves upon a vertical post 19, which is provided with reduced and threaded upper and lower ends 20 and 22. Surrounding the reduced ends of the post 19 are complementary collars 23 and 24, which are received over the reduced ends of the post and engage the bearing plates between them, as indicated. Each of the bearing plates is provided with an opening which fits a sleeve 25 formed upon the collar 23. The collars are held in assembled relation through nuts 26 threaded upon the reduced ends of the posts. With this construction, it will be evident that the cage as a whole is revoluble about the vertical post 19, the parts being held in assembled relation by the nuts to prevent displacement of the cage. The collars 23 and 24 are made of insulating material, such as bakelite, to insulate the cage from the bearing post. The lower reduced end 22 of the post is made sufficiently long to thread into a supporting standard 30, which holds the post rigidly in vertical position. The standard 30 is in the form of a casting of bronze or similar non-corrodible material and is provided with two legs 32 and 33 having out-turned inclined flanges 34. The flanges on the standard are adapted to be connected to opposite sides of the ridge-pole of a roof by lag screws 38. This construction forms a simple and efficient method of mounting the antenna upon the roof of a house or similar structure. The ends of the antenna wires at the small end of the cage are connected to a common lead 50, which has the form of a hollow tube of copper or similar

material. At its opposite end, the lead 50 is permanently connected with a rotatable ring 52, which is mounted upon a flanged sleeve 54 and held in place thereon by a nut 55 threaded upon the sleeve and holding the ring against displacement through a flexible corrugated washer 56. The assembly consisting of the sleeve, ring and collar is supported by the standard 30 and insulated therefrom through a bakelite bushing 60. The usual lead-in wire indicated at 62 is permanently connected to the flanged portion of the stationary sleeve 54. With this construction, the ring 52 is rotated with the movements of the cage antenna. An umbrella housing 64 projects over and protects the assembly against the entrance of rain and snow. This housing is in the form of an inverted cup shaped member supported on the top portion of the standard and is held in place by the post 19. From an inspection of Figs. 1 and 2, it will be observed that the ends of the antenna wires 10 project beyond the supporting ring 12 at the large end of the cage to form a series of separate and independent receiving points for the collection of radio waves. Through the employment of a series of separate and independent antenna wires arranged in this manner, relatively weak signals may be picked up and conveyed to the common lead. Furthermore, through the directional effect exerted by the revolving cage antenna, a marked degree of selectivity is obtained.

If so desired, the revolving cage may be locked against swiveling movement about the post by an adjustment of the nut 26 which may be threaded against the insulating collar in a manner to clamp the cage to the supporting post. In order to permit such a clamping effect, the hub 25 is made slightly shorter than the combined thickness of the collars and the plate 16. The nut 26 may be retained in position to either clamp the cage to the post or to permit swiveling movement by a second check nut 70. Under certain conditions this fixed directional effect may be advantageous.

It will be seen that the apparatus is compact, self-contained and may be readily erected without the necessity of a large free space or the employment of special construction for supporting purposes. In actual practice, a cage approximating a length of two feet and having a weight less than three pounds has given highly satisfactory results.

While it is preferred to employ the specific construction and arrangement of parts shown and described, it will be understood that this construction and arrangement is not essential except so far as specified in the claims and may be changed or modified without departing from the broader features of the invention.

The invention having been described, what is claimed is:

1. A receiving antenna comprising a series of antenna wires, means for supporting the antenna wires in tubular formation with the ends of the wires projecting beyond the supports to form separate and independent collecting points, a common lead connected with the opposite ends of the wires, and means for rotatably supporting the antenna cage horizontally upon a supporting structure.

2. A receiving antenna comprising a tapered tubular cage having a series of antenna wires extending lengthwise thereof, a vertical post revolvably connected to the cage adjacent the large end and insulated therefrom, a supporting standard rigidly connected to the post, a rotatable collector ring mounted on the standard, and electrical connections between the cage and collector ring.

3. A receiving antenna comprising a tubular cage having a series of spaced wires extending lengthwise of the cage and forming the periphery, a mounting connected to the cage adjacent one end only and extending transversely to the long axis of the cage, and a common lead connected to the antenna wires adjacent the opposite end of the cage.

4. A receiving antenna comprising a tubular cage having a series of spaced antenna wires extending lengthwise thereof, a vertical support extending transversely to the long axis of the cage, connections between the support and the cage for permitting a rotative movement of the cage with respect to the support, and a lead connected with the cage at a point removed from the support.

5. A receiving antenna comprising a tubular cage having large and small supporting rings adjacent opposite ends and an intermediate supporting ring adjacent the smaller end and of lesser diameter than the large supporting ring, a series of spaced antenna wires extending lengthwise of the cage and connected to the rings, a supporting standard extending transversely of the long axis of the cage, rotative connections between the supporting standard and the large ring, and a lead connected to the small ring at the opposite end of the cage.

6. A receiving antenna comprising a rigid tubular cage formed by a series of annularly-disposed antenna wires extending lengthwise thereof, a support extending transversely to the long axis of the cage and normally maintaining the cage in a horizontal position, and means for locking the cage in different rotative positions to permit pointing of the long axis in any desired direction in the plane of support.

7. A receiving antenna comprising a rigid tubular cage having a series of spaced antenna wires extending lengthwise and forming the periphery, means connected to the cage at one end only for supporting the cage

in substantially horizontal position, and a lead-in connected to the cage adjacent the opposite end.

5 8. A receiving antenna comprising a rigid tubular cage having a series of spaced antenna wires extending lengthwise and forming the periphery, a support, connections between the support and one end only of the cage for mounting the cage in substantially horizontal position, and means for electrically insulating the cage from the support, and an electrical lead-in connected to the cage.

10 9. A receiving antenna comprising a series of metallic supporting rings, spaced antenna wires disposed annularly about the rings and electrically connected thereto to form an open tubular and rigid cage, means connected to diametrically opposite sides of one of the rings for supporting the cage adjacent one end only, and a common lead-in connected to the opposite end of the cage.

15 20 In testimony whereof I have signed my name to this specification.

ARTHUR M. STANLEY.

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