

May 27, 1924.

1,495,537

S. F. STAFFORD

DOUBLE HELIX CAGE ANTENNA

Filed Aug. 21 1923

Fig. 1.

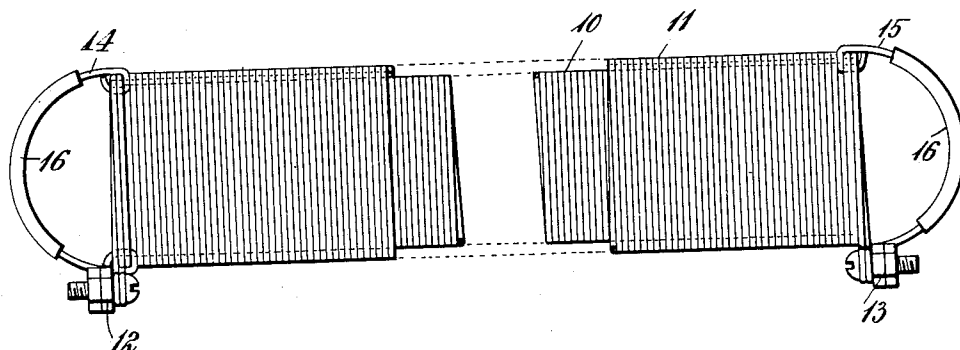


Fig. 2.

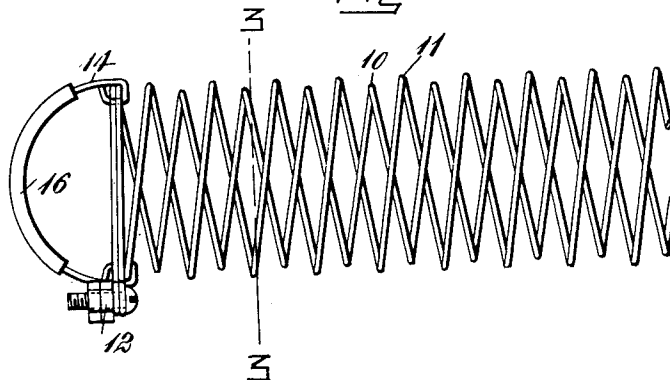
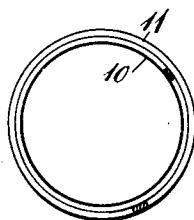


Fig. 3.



Inventor:
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by Clyde H. Rogers
his atty.

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UNITED STATES PATENT OFFICE.

STEPHEN F. STAFFORD, OF MEDFORD HILLSIDE, MASSACHUSETTS, ASSIGNOR TO STAFFORD RADIO CO., OF SOMERVILLE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

DOUBLE-HELIX CAGE ANTENNA.

Application filed August 21, 1923. Serial No. 658,631.

To all whom it may concern:

Be it known that I, STEPHEN F. STAFFORD, a citizen of the United States, and resident of Medford Hillside, county of Middlesex, Commonwealth of Massachusetts, have invented an Improvement in Double-Helix Cage Antennæ, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts in each of the several views.

This invention relates to antennæ for radio apparatus, and more particularly to a so-called "cage" type of antenna particularly, though not exclusively, adapted for indoor use. The invention consists in providing a cage type antenna composed of two helices of wire or strip material, preferably hard spring wire wound in opposing relation with one helix nested within the other, and with the coils of such relative size that they are in contact when stretched out for use substantially at each convolution. The foregoing and other objects and advantages of the invention will more fully appear from the following detailed description taken in connection with the accompanying drawings, and the distinctive features of novelty will be pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is an elevation showing an antenna embodying the invention with an intermediate portion broken away and with the helices contracted;

Fig. 2 is a partial elevation showing one end of the device with the helices stretched out as in use; and

Fig. 3 is a transverse section on line 3—3 of Fig. 2.

The antenna of my invention comprises two helical coils 10, 11 spirally wound in opposite directions with respect to each other with the coil 10 quite closely nested within the coil 11. These coils are preferably produced of hard spring wire, and of a metal having a reasonably high conductive property such as brass, though the invention is not limited in this respect. The size of wire employed for these coils may be varied within the contemplation of the invention, but I have found that wire having a diameter of forty-nine thousandths of an inch (.049") is well suited for the purpose. The ends of the wire of these coils are en-

gaged with binding posts 12, 13 at the respective ends of the device, and the coil ends are also equipped with bails 14, 15, respectively which may be covered with rubber tubing or like insulating material 16. In use the coils are stretched across a room or any place desired so that the bails 16 at the respective ends thereof may be engaged with conveniently mounted hangers or supports. The device is adapted for use in a loop arrangement or as a direct antenna, the binding posts 12, 13 at the two ends of the device permitting attachment to either one thereof as may be more convenient when used as a direct antenna, and one of such binding posts being connected to the ground post of the receiving set as usual when the device is used in a loop arrangement. By providing the two oppositely wound helices, each neutralizes the induction or magnetic field of the other. A further advantage is that each coil is in electrical contact with the other at close intervals substantially throughout the extent thereof, so that the current passes in a more nearly straight path from end to end, as in a pipe, and without having to traverse a spiral path. When the coils are stretched out for use as shown in Figure 2, the turns are separated enough so that there is practically no self-induction, and the coils being in close electrical contact throughout, there is practically no capacity effect between the two coils. I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An antenna composed of two helices wound in opposing relation with respect to each other with one thereof nested within the other.

2. An antenna composed of two helices wound in opposing relation with one thereof closely nested within the other so that said helices are in electrical contact with each other substantially at each turn thereof.

3. An antenna composed of a plurality of helices wound in opposing relation with one nested within another, and equipped with means at two ends thereof for engagement with a hanger or support. 10

5 4. An antenna composed of two helices of hard spring wire wound in opposing re-

lation with one thereof closely nested within the other, and with bails at the respective ends thereof for engagement with a hanger or support.

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

STEPHEN F. STAFFORD.