

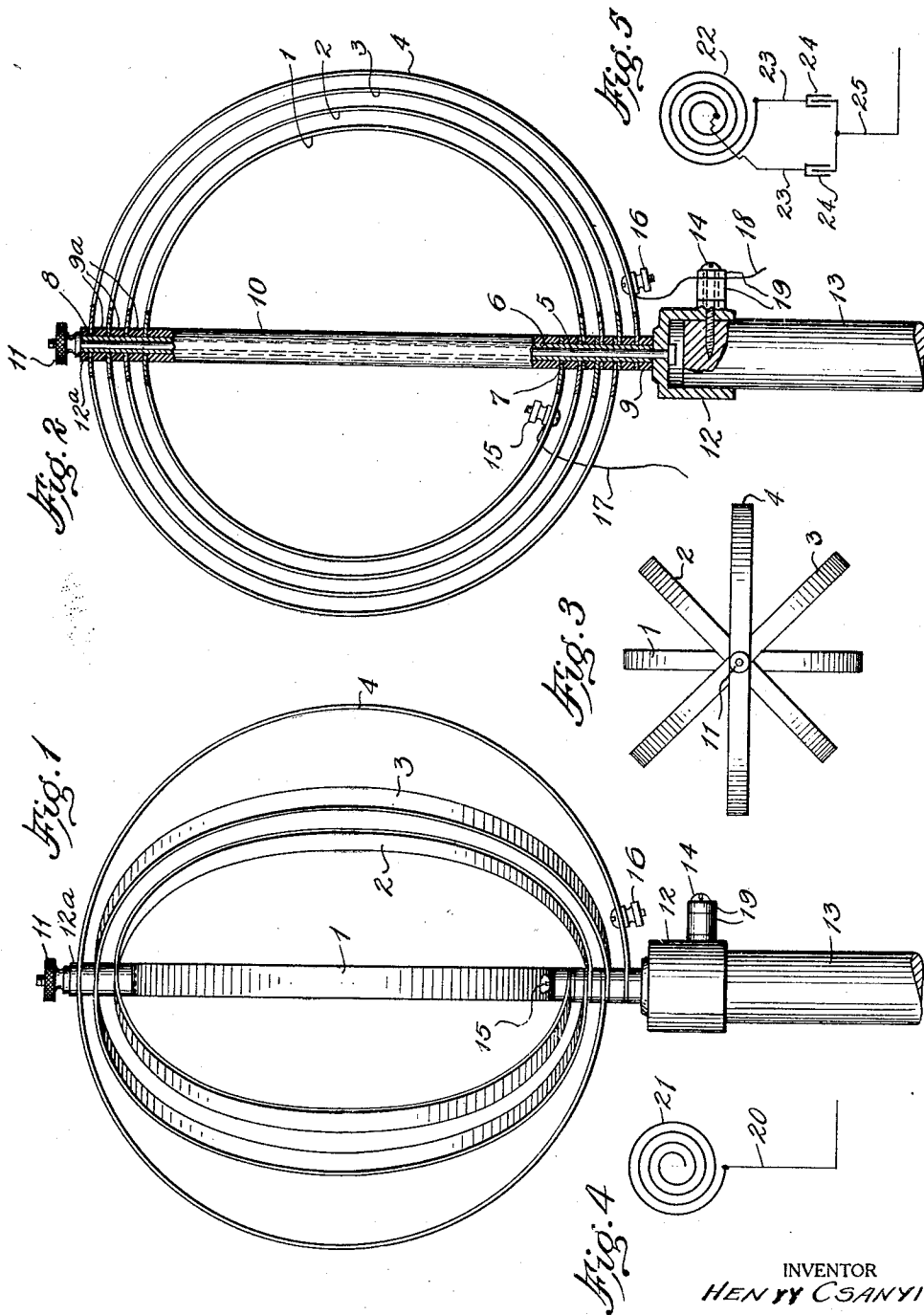
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ANTENNA

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# UNITED STATES PATENT OFFICE.

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## ANTENNA.

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This invention is an improvement in antennæ, designed for use with radio apparatus, and more particularly in antennæ of the portable type.

The usual construction of antenna whether composed of a single wire, or a plurality of wires arranged in parallel, is fixed, and it is not possible to provide for directional receiving with such an arrangement. In addition, in cities especially, there are usually many installations in relatively close relation, and as a consequence interference between the sets.

The installation of an antenna of the usual construction is not always possible, especially in cities. Roofs are usually the only sites available, and a roof is not always accessible, and when accessible is overcrowded with other installations.

One of the primary objects of the present invention is the provision of a construction of antenna readily portable, and requiring no open area for installation. That is an antenna which may be thrust from a window for instance, or supported by a pole in any desired location.

Another object is the provision of an antenna composed of elements so mounted that they may be caused to occupy various angles with respect to each other, whereby to provide for directional reception.

Another object is the provision of an antenna composed of a number of open rings or convolutions, so mounted that they may be caused to occupy the same plane or a plurality of intersecting planes, and wherein the convolutions are connected in series so that the impulses received by each are transmitted to the succeeding.

With these and other objects in view, the invention consists in the construction and novel combination of parts fully described hereinafter, illustrated in the accompanying drawings, and pointed out in the claims appended hereto, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims, may be resorted to without departing from the spirit of the invention.

In the drawings:

Fig. 1 is a front view of the improved antenna with the convolutions occupying a plurality of intersecting planes.

Fig. 2 is a similar view with the parts in

section, showing the convolutions occupying the same plane, that is in folded position.

Fig. 3 is a top plan view of the antenna in the position shown in Fig. 1.

Figs. 4 and 5 are diagrammatic views showing different methods of connecting the antenna with the set.

In the present embodiment of the invention the improved antenna is composed of a number of similar ribbon like convolutions indicated at 1, 2, 3 and 4, each of sheet metal in strip form. Each convolution is an open ring, with the ends offset slightly with respect to each other.

The rings are arranged with one end of each lapping the symmetrical or opposite end of the preceding, so that the rings are connected in a coil which is continuous so far as electric conductivity is concerned. That is an electric impulse may pass from one end of the coil to the other through the lapping connections, while at the same time the individual convolutions or rings are free to move angularly with respect to each other, so that the convolutions may be caused to occupy a common plane or a plurality of intersecting planes.

A support for the antenna is utilized to connect the rings. This support comprises a central rod 5 encircled by a sleeve 6 of insulating material. Openings indicated at 7 are provided in the ends of the rings, and other openings 8 intermediate the ends, the openings 8 of each ring being in diametric alinement with the openings 7 at the ends thereof. These openings are of a size to receive the sleeve 6, and spacing collars 9 are arranged on the sleeve 6, for properly spacing the rings or convolutions.

Referring to Fig. 2, it will be seen that one end of the convolution 4 is arranged between two spacing collars on the sleeve 6. The corresponding end of the convolution 3 rests against the second collar, and the opposite or symmetrical end of the convolution 4 laps upon the said end of the sleeve 3.

A spacing collar is placed above the lapping ends, and the same procedure is followed for the ends of the remaining rings. That is the ends of the rings 3 and 4 lap, the ends of the rings 2 and 3 lap, and the ends of the rings 1 and 2 lap, the lapping providing for series electric conductivity.

A long collar or sleeve 10 encircles the sleeve 6 above the end of the convolution 1,

and between the said end and the body of the convolution. The openings 8 of the several convolutions are placed over the sleeve 6, and collars 9<sup>a</sup>, similar to the collars 9 are arranged on the sleeve between the bodies of the respective convolutions, the said spacing collars 9—9<sup>a</sup> and 10 being of insulating material.

The upper end of the rod 5 is threaded, and is engaged by a knurled nut 11, a spacing insulating collar 12<sup>a</sup> being arranged between the nut and the body of the convolution. A socket or cap 12 is a part of the support. In the present instance the rod 5 passes through an opening in the cap, and is headed to prevent disengagement thereof. The cap is adapted to fit over the end of a pole 13 of any suitable nature, and may be secured thereto by a screw 14 passing through the cap and into the material of the pole.

Binding posts 15 and 16 are connected with the free ends of the rings 1 and 4, and wires 17 and 18 may lead from the binding posts to the radio set. Preferably the wire 18 is also supported by the socket 12 and the screw 14, an insulating clamp 19 being provided for engaging the wire.

The antenna may be connected to the set in the manner shown in Fig. 4, that is by a single wire 20 leading from the coil 21 to the antenna post of the set. Or it may be connected in the manner shown in Fig. 5.

In this arrangement the ends of the coil 22 are connected by wires 23 with fixed condensers 24, one wire being connected to each condenser. From the center of the condensers a branched wire 25 connects with the set, a branch leading from the center of each condenser. This arrangement acts to a considerable extent to eliminate static.

What is claimed as new is:

1. An antenna comprising a plurality of similar helical convolutions in series conduc-

tivity and pivoted together to swing into a common plane or into a plurality of intersecting planes.

2. An antenna comprising a helical coil of conducting material, composed of a plurality of independently movable convolutions, the convolutions in series conductivity, and means to mount the convolutions for swinging movement on a common axis.

3. An antenna comprising a helical coil of conducting material, composed of a plurality of independent convolutions in series conductivity, and means for supporting the coil with the adjacent ends of the convolutions in lapping relation and pivotally mounted whereby the convolutions may occupy a common plane, or a plurality of intersecting planes.

4. An antenna including a plurality of independently movable convolutions arranged to form a helix and in series conductivity, and a support for the convolutions having means to hold adjacent ends of the convolutions in lapping relation and with the bodies of the convolutions insulated one from the other, and with the convolutions pivotally mounted to occupy a common plane, or a plurality of intersecting planes.

5. An antenna comprising a plurality of similar helical convolutions in series conductivity and pivoted together to swing into a common plane or into a plurality of intersecting planes, the convolutions of strip material and mounted to be parallel when occupying a common plane.

6. An antenna comprising a helical coil of strip metal composed of a plurality of independently movable coils pivotally connected in series to occupy a common plane or a plurality of intersecting planes.

Signed at New York, in the county of New York and State of New York, this 13th day of November, A. D. 1926.

HENRY CSANYI.