

Sept. 22, 1925.

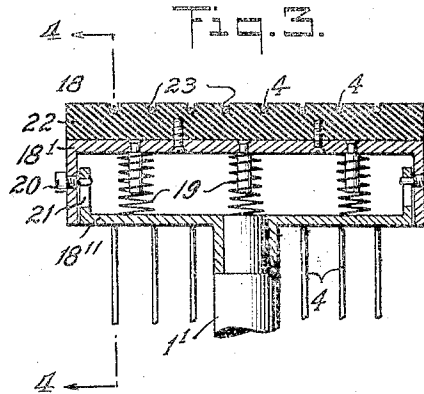
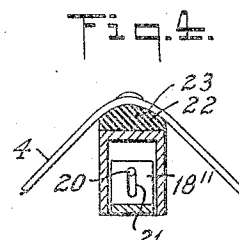
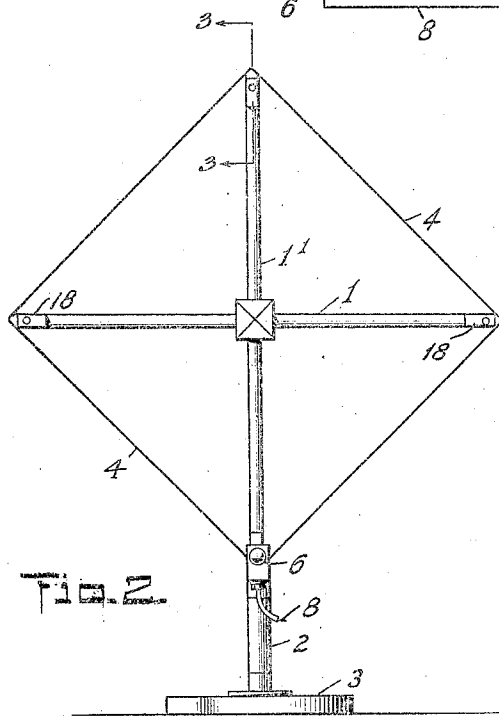
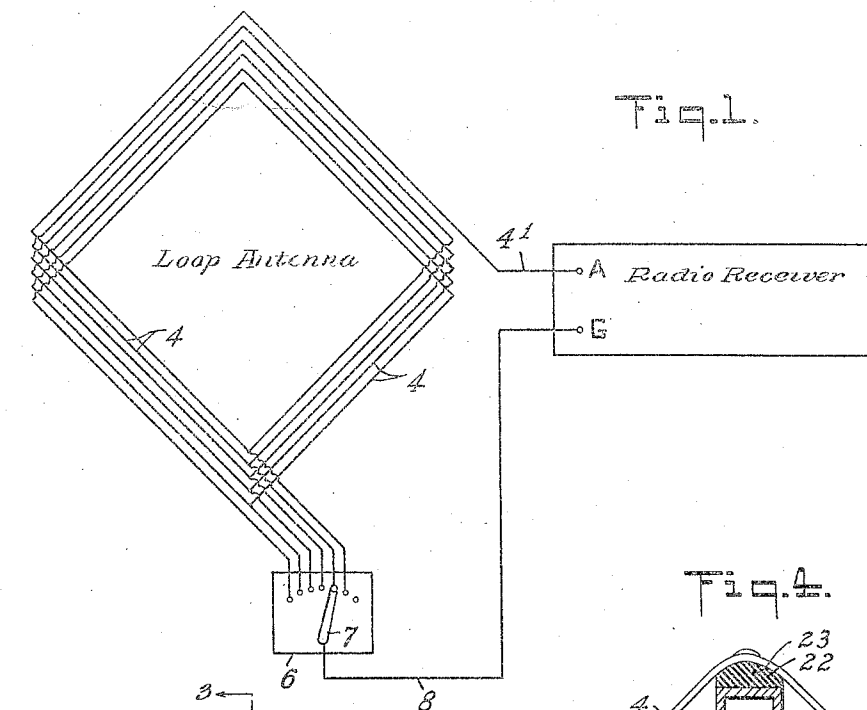
1,554,328

I. M. BRENNER

RADIOANTENNA

Filed Nov. 2, 1923

3 Sheets-Sheet 1



INVENTOR  
Isidore M. Brenner

BY  
William Thomas Jones  
ATTORNEY

Sept. 22, 1925.

1,554,328

I. M. BRENNER

RADIOANTENNA

Filed Nov. 2, 1923

3 Sheets-Sheet 2

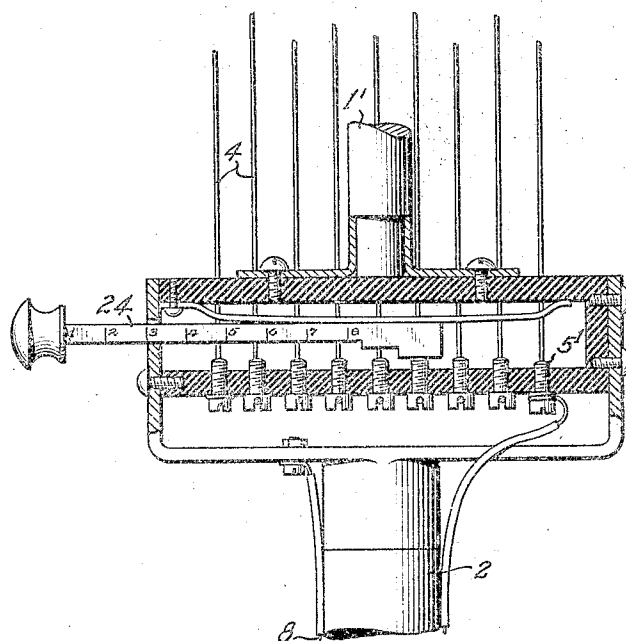


Fig. 5.

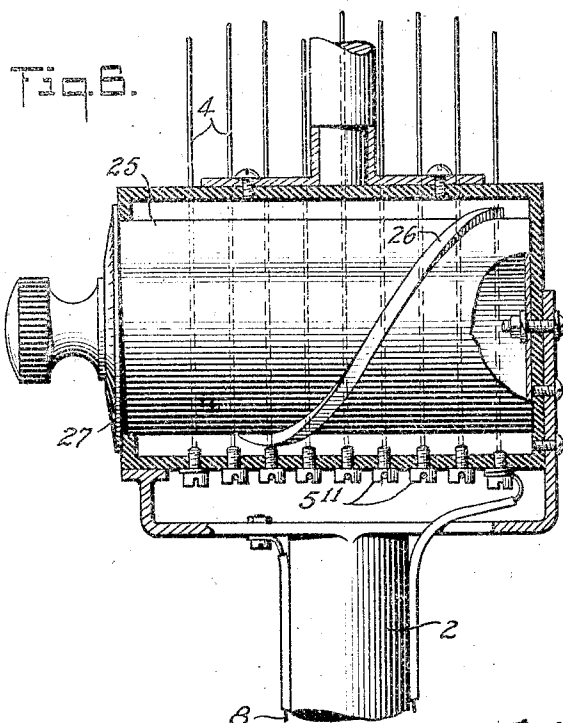


Fig. 6.

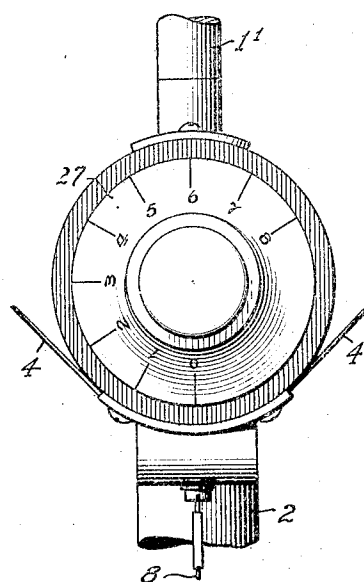


Fig. 7.

INVENTOR  
Isidore M. Brenner

BY  
William Thomas Jones  
ATTORNEY

Sept. 22, 1925

1,554,328

I. M. BRENNER

RADIOANTENNA

Filed Nov. 2, 1923

3 Sheets-Sheet 3

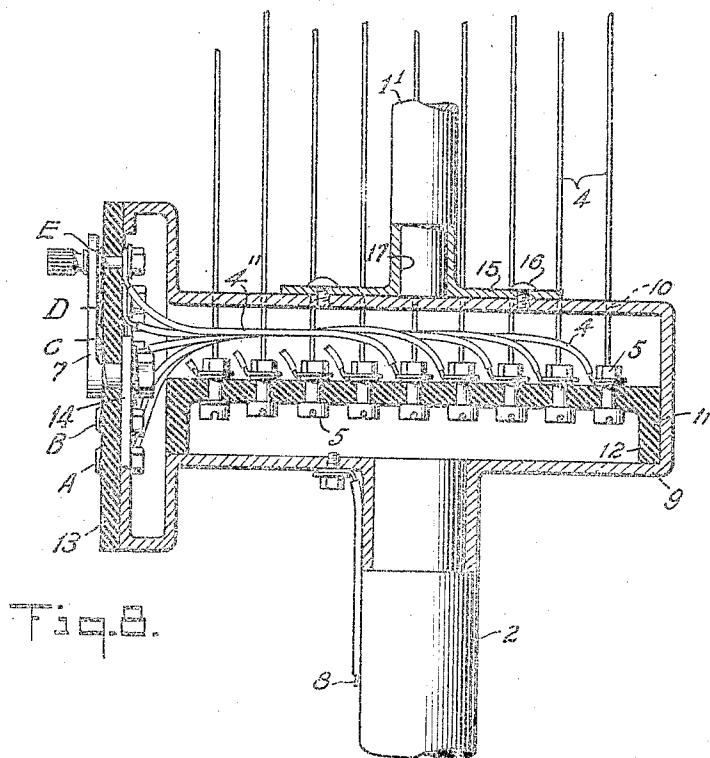
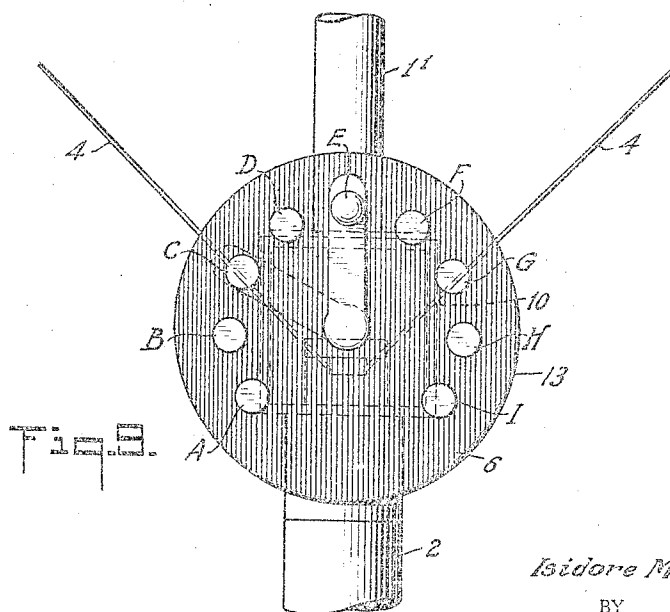


Fig. 8.



INVENTOR

Isidore M. Brenner

BY

William Thomas *John*  
ATTORNEY

## UNITED STATES PATENT OFFICE.

ISIDORE M. BRENNER, OF NEW YORK, N. Y.

## RADIOANTENNA.

Application filed November 2, 1922. Serial No. 675,265.

*To all whom it may concern:*

Be it known that I, ISIDORE M. BRENNER, a citizen of the United States, residing at New York, in the county and State of New York, have invented a new and useful Improvement in Radioantennae, of which the following is a specification.

My invention relates to radio antenna and is particularly adapted for use in connection with an indoor aerial or loop antenna for the reception of radio transmission.

It is of course well known that different receiving sets require different lengths of antenna to secure the best results. The correct length of antenna cannot always be determined in advance to balance the capacity of the set and therefore loop antennae of fixed length cannot be so readily sold with the assurance of satisfactory results. Furthermore, one of the objections to radio reception is the lack of clear reception caused by interfering broadcast stations or statics.

I have found that there is a particular length of antenna which will give the best results for each particular station while using the same receiving set, in other words, the different stations require different lengths of antenna and that such proper length of antenna materially eliminates interference and statics. In fact, the variation of aerial length is so effective that in sets having a variable condenser in the antenna circuit, stations may be tuned in and out without touching the variable condenser and it can be eliminated.

One of the objects of this invention is to provide an aerial so arranged as to permit of the change or variation of length of the aerial. Another object of the invention is to obtain clearer reception and the elimination of interference. Still another object of the invention is to provide a loop aerial that is adaptable for use with any receiving set. Still another object is to reduce current consumption since by the proper adjustment of the length of the loop or loops the reception from any one particular station can frequently be made sufficiently clear to permit of the cutting out of one or more tubes.

Referring to the drawings:

Figure 1, shows the loop antenna circuit.

Figure 2, shows the loop aerial in front elevation.

Figure 3, is a detailed sectional view looking along the line 3, 3, Figure 2, in the di-

rection of the arrows of the end of the cross arms.

Figure 4, is a detailed sectional view looking along the line 4, 4, Figure 3, in the direction of the arrow.

Figure 5, is a sectional view of a modified form of control switch.

Figure 6, is a sectional view of another modified form of control switch.

Figure 7, is a front view in elevation of the modified form shown in Figure 6.

Figure 8, is a sectional view of a control switch.

Figure 9, is a front view in elevation of the control switch shown in Figure 8.

In carrying out my invention I propose to employ a frame composed of cross arms 1, 1' suitably secured to each other and to upright 2, journaled to permit of its rotation in base 3. Wires 4, are wound about the cross arms 1, 1' as shown in Figures 1 and 2. The wires 4, however, are not one continuous wire but form loops of predetermined length and have the end of each loop soldered to the adjacent loop with the exception of the final end and the other end of each loop is led down to a binding post 5 of the control switch 6. The final end of the last loop is connected to the antenna binding post A of the radio receiver and the switch lever 7 is connected by wire 8 to the ground binding post G of the radio receiver.

The detail construction of the aerial is as follows:

Base 3 is of wood or other suitable material and has upright 2 journaled therein to permit of rotation. Affixed to upright 2, (see Figures 8, 9,) is the control switch 6. The latter has a housing 9 having openings 10 therein for wires 4 to pass therethrough. A block 11 of non-conducting material having legs 12, within said housing 9, carries binding posts 5 for each wire 4. Attached to the front of housing 9 is coverplate 13, having contacts A, B, C, D, E, F, G, H, I. Wires 4' connect respectively each of the contacts A, B, C, etc., with one of the binding posts 5. Switch arm 7 is connected through contact 14 to housing 9 through lead 8, to ground B of receiver.

Plate 15, is secured to the top of housing 9 by bolts 16, and has a socket 17, for the reception of cross arm 1'.

In order to maintain the loops of antenna

wire taut and under a proper tension I propose to provide a spring tension at the ends of the cross bars 1, 1'. This may be accomplished in various ways and I have shown a housing 18 comprising a cover 18' and a base 18'' collapsible therein and held apart by any suitable elastic means such as helical springs 19. To prevent the separation of cover 18' and base 18'', and to limit the amount of play between the two, I secure the base 18'' to the cover 18' by means of bolts 20 operating in slots 21 of base 18''. Bolted to cover 18' are triangular blocks 22 of wood, hard rubber or other suitable material having grooves 23 cut in the apex to receive wires 4 and maintain them in their proper relationship.

In the modified form of control switch shown in Figure 5, I propose to employ a sliding contact arm 24, having indicating marks thereon to designate which loop binding post 5' the contact is in connection with.

In the modified form of control switch shown in Figures 6 and 7, I propose to provide a rotatable drum 25 having a helical contact 26 which, as the drum is rotated, comes into contact with different binding posts 5'', depending upon the degree and direction of rotation. A dial 27 carried by the drum 25 indicates which loop is connected.

The operation of the device is very simple. The lead wire 4' from the loop antenna is secured to the antenna post A of the receiving set and the lead wire 8 from the switch is secured to the ground post of the receiving set. The frame carrying the loops is then rotated in its base 3 in the direction of the signals, if the direction of the particular station is known and then the set is tuned in and the switch 7 of the set is adjusted to give the proper length to secure the clearest and best reception.

Various modifications of construction might be made and still fall within the scope of my invention, and I have shown several such modifications.

I claim:

1. A loop aerial comprising a frame of substantially radial arms, wire supports located substantially at the ends of the arms, said supports including dielectric material and wire-spacing means, loop wire encircling the supports and retained by the spacing means and resilient means acting between an arm and its wire support to urge the latter outward and tension the loop wire.

2. A loop aerial comprising a frame of substantially radial arms, wire supports

located substantially at the ends of the arms, said supports including dielectric material and wire-spacing means, loop wire encircling the supports and retained by the spacing means, and resilient means acting between a plurality of the arms and the respective wire supports to urge the supports outward and tension the loop wire.

3. A loop antenna comprising a base, a standard rotatably mounted thereon, a switch box on the standard, a loop frame consisting of a plurality of substantially radial arms, one of which is mounted on the switch box, wire supports located substantially at the ends of certain of the arms and including insulating material having wire-spacing means, an antenna consisting of a plurality of wire loops passing about said supports, metal contact members in the switch box providing additional supports and circuit contacts for the loop wires, and a movable element having an externally accessible handle for controlling the loop circuit.

4. A loop antenna comprising a base, a standard rotatably mounted thereon, a switch box on the standard, a loop frame consisting of a plurality of substantially radial arms, one of which is mounted on the switch box, wire supports located substantially at the ends of certain of the arms and including insulating material having wire-spacing means, resilient means acting between the arms and the wire supports to urge the latter yieldingly outward, an antenna consisting of a plurality of wire loops passing about said supports and tensioned by them, metal contact members in the switch box providing additional supports and circuit contacts for the loop wires, and a movable element having an externally accessible handle for controlling the loop circuit.

5. In a loop antenna the combination with a frame arm of a cross-piece of insulating material located substantially at the end of the arm, wire-retaining and spacing means thereon to hold and space a plurality of loop turns, a member on the arm movably supporting the cross-piece, and a plurality of springs in spaced relation lengthwise of the cross-piece and acting between the frame and the cross-piece to urge the latter yieldingly outward at a plurality of points and apply tension to the loop wires.

Signed at New York, in the county of New York and State of New York, this 29th day of October, 1923.

ISIDORE M. BRENNER.