

June 26, 1951

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ANTENNA

2,558,145

Filed May 20, 1948

2 Sheets-Sheet 1

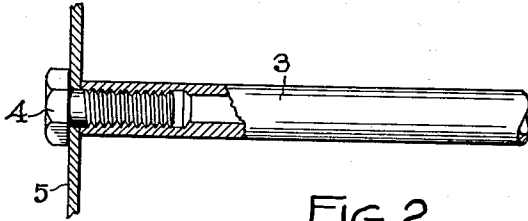


FIG. 2

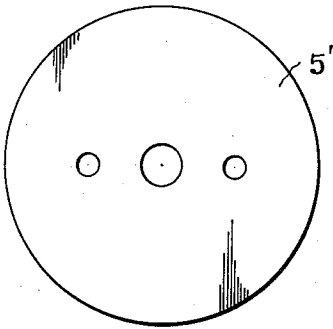


FIG. 4

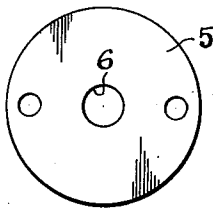


FIG. 3

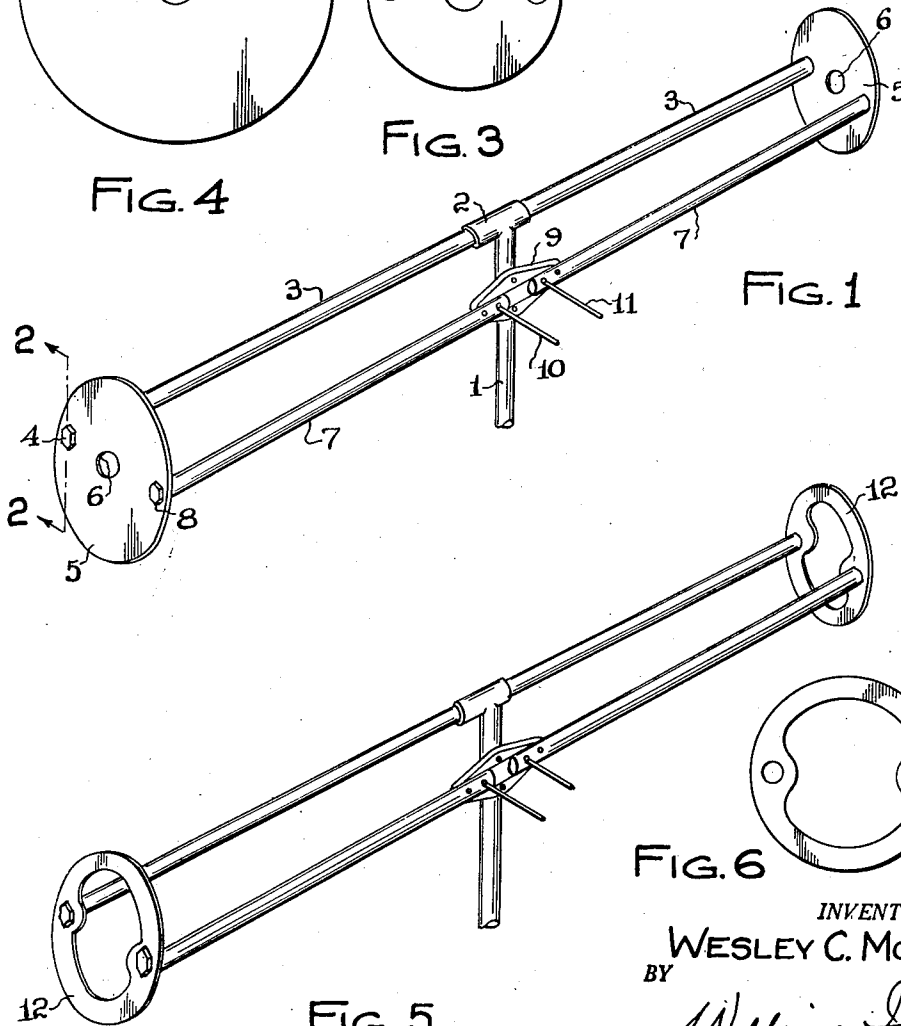


FIG. 1

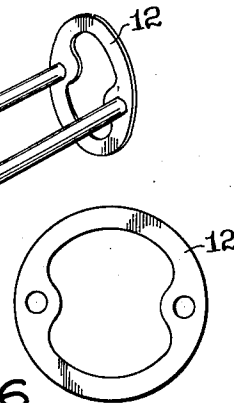


FIG. 6

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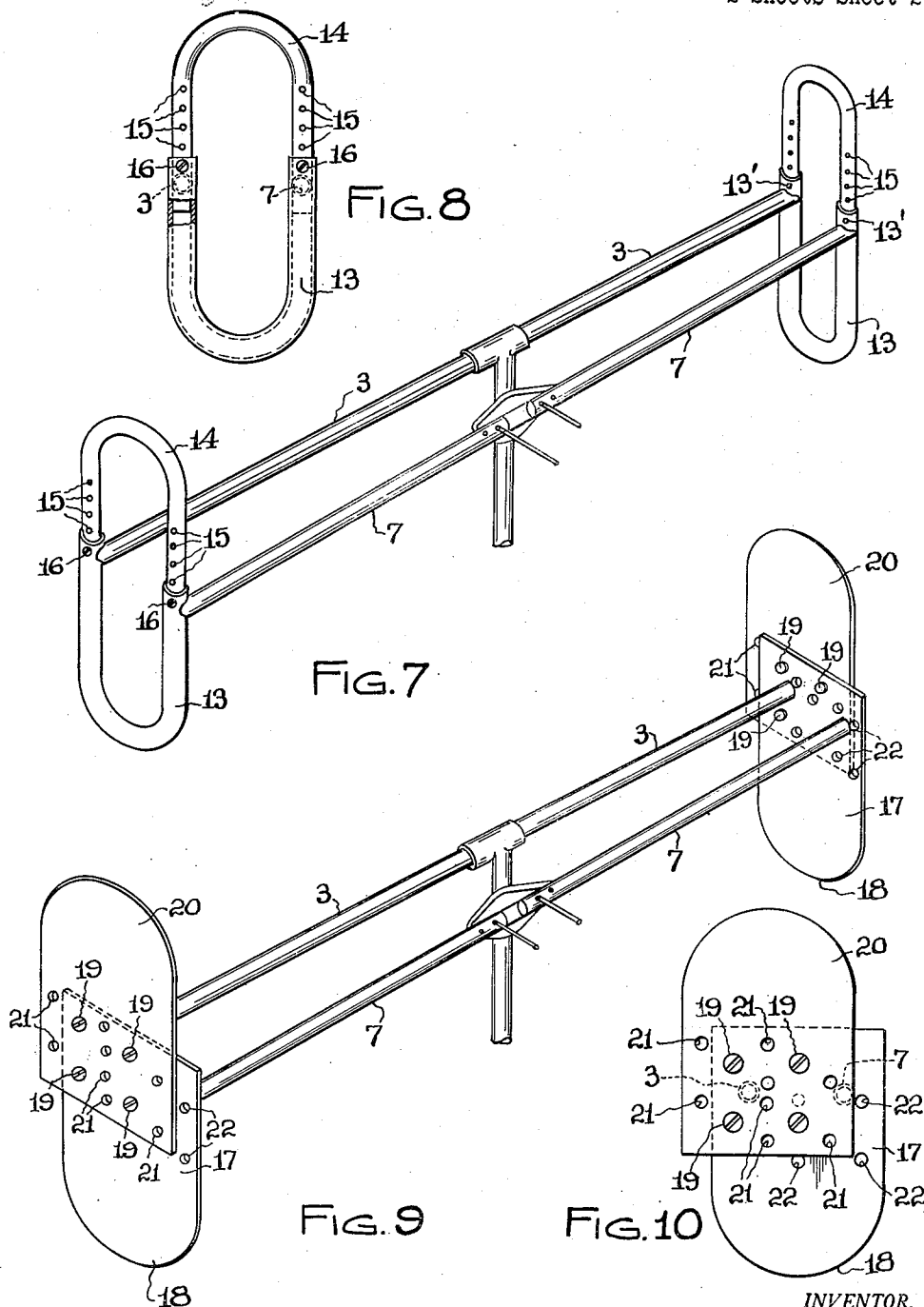
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## UNITED STATES PATENT OFFICE

2,558,145

## ANTENNA

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Application May 20, 1948, Serial No. 28,215

13 Claims. (Cl. 250—33)

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This invention relates, as indicated, to antennae, but has reference more particularly to antennae of the type which are adapted for television transmitting and receiving purposes.

It has heretofore been proposed to use dipole and other types of television antennae, utilizing tubular rods which are expansible for the purpose of tuning the antenna or broadening its response.

I have discovered, as a result of extensive tests, that equivalent tuning characteristics can be provided more conveniently by means at the ends of dipolar and similar antennae, for increasing the length of the signal current path, such means being arranged in planes normal to the general plane of the antenna.

Such means may assume various forms and styles, and are illustrated more or less diagrammatically by the enclosed drawing, in which

Fig. 1 is a perspective view of a dipole antenna having end plates secured thereto;

Fig. 2 is a fragmentary cross-sectional view, taken on the line 2—2 of Fig. 1;

Fig. 3 is an elevational view of one of the end plates shown in Fig. 1;

Fig. 4 is an elevational view of an end plate of a size different than that shown in Fig. 3, but adapted for use with the dipole antenna of Fig. 1;

Fig. 5 is a view similar to Fig. 1, but showing a different type of end plate;

Fig. 6 is an elevational view of one of the end plates shown in Fig. 5;

Fig. 7 is a view similar to Fig. 1, but showing an adjustable tubular arrangement for the ends of the antenna;

Fig. 8 is an elevational view of one of the end arrangements shown in Fig. 7;

Fig. 9 is a view similar to Fig. 1, but showing an adjustable plate arrangement for the ends of the antenna, and

Fig. 10 is an elevational view of one of the end arrangements shown in Fig. 9.

Referring to Figs. 1 to 4 inclusive, there is disclosed a dipole antenna comprising a mast 1 having a cross-head 2 to which tubular antenna rods 3 are secured.

Secured to the ends of the rods 3, as by means of screwbolts 4 are circular end plates 5 having circular central openings 6.

Secured to the edges of the plates 5 which are diametrically opposite the bolts 4, are tubular antenna rods 7, these rods being secured to the end plates by means of screwbolts 8. The rods 7 are, as shown, disposed in parallel relationship to the rods 3, and are connected to each other

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by means of a connector plate 9. Leads 10 and 11 are connected to the rods 7, as shown in Fig. 1.

It may be noted that the end plates 5 are disposed in planes which are parallel with each other, but normal to the axis of the rods 3 and 7.

In order to increase the length of the signal current path through the end plates, end plates of different diameters may be provided and connected to the rods 3 and 7. One of such plates is the plate 5' in Fig. 4. By the substitution for the plates 5 of other plates of larger diameter, the antenna may be tuned to different frequencies and the responsiveness of the antenna generally broadened.

In Figs. 5 and 6, a modification of the invention is shown, in which the end plates 12 have the central portions thereof removed to increase the length of the signal current path through the end plates.

In Figs. 7 and 8, the rods 3 and 7 are connected at their ends to a U-shaped tubular end member 13 disposed in planes normal to the axis of the rods. These members 13 carry inverted U-shaped tubular members 14, the arms of which are telescopically slidable in the arms of the members 13. The members 14 are coplanar with the members 13. For the purpose of increasing the length of the signal current path through the end members 13 and 14, the members 14 may be adjusted relatively to the member 13. For this purpose, the legs of the members 13 are provided with transverse openings 13' at their upper ends which may be aligned with any pair of a series of spaced pairs of openings 15 in the legs of the members 14, and screws 16 inserted through the aligned pairs of openings.

In Figs. 9 and 10, the rods 3 and 7 are connected at their ends to plates 17 having rounded lower edges 18, these plates being disposed in planes normal to the axes of the rods. The plates 17 have connected thereto, as by means of screws 19, plates 20 which are similar to plates 17, but in inverted relation to the latter. The plates 20 are in contact with the plates 17 and are substantially coplanar with the latter. For the purpose of increasing the length of the signal current path through the plates 17 and 20, the members 20 may be adjusted relatively to the members 17. For this purpose, the plates 20 are provided with a plurality of pairs of openings 21 which may be aligned with similar pairs of openings 22 in the plates 17, the screws 19 being inserted through the aligned openings.

It will be apparent that in each of the foregoing antennae, provision has been made for ad-

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justing the length of the signal current path in members disposed at the ends of the antenna and in planes normal to the axes of the antenna rods.

It is to be understood that the form of my invention, herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of my invention, or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. An antenna, comprising parallel rods spaced from each other throughout their length, signal-receiving members directly secured to the ends of said rods, and similar signal-receiving members directly connected to said first-named members and adjustable relatively to the latter in planes substantially perpendicular to the axes of said rods to vary the signal current path through said members.

2. An antenna, as defined in claim 1, in which said members are disposed in planes perpendicular to the axes of said rods.

3. An antenna, as defined in claim 2, in which said second-named members are slidable relatively to said first-named members.

4. An antenna comprising parallel conductive rods spaced from each other throughout their length, leads connected to one of the rods, U-shaped conductive members directly secured to the ends of said rods, and similar U-shaped conductive members connected to said first-named members and adjustable relatively to the latter in planes substantially perpendicular to the axes of said rods for varying the length of the signal current path through the end members.

5. An antenna, as defined in claim 4, in which said members are disposed in planes perpendicular to the axes of said rods.

6. An antenna comprising parallel rods, U-shaped tubular members secured to the ends of said rods, and similar U-shaped members connected to said first-named members and telescopically slidable in relation to the first-named members, said first and second-named members being disposed in planes perpendicular to the axes of said rods.

7. An antenna, as defined in claim 6, in which said first-named members are provided with openings in the arms thereof, and said second-named members are provided with a plurality of

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spaced pairs of openings adapted for alignment with said first-named openings.

8. An antenna comprising spaced parallel conductive rods, leads connected to one of the rods, tubular U-shaped conductive members directly secured to the ends of said rods and disposed in planes substantially perpendicular to the axes of said rods, and similar tubular U-shaped conductive members connected to and telescopically slidable relatively to said first-named members for varying the length of the signal current path through the end members.

9. An antenna, as defined in claim 8, in which said first-named members are provided with openings in the arms thereof, and said second-named members are provided with a plurality of spaced pairs of openings adapted for alignment with said first-named openings.

10. An antenna, as defined in claim 1, in which said first-named signal-receiving members are plates, and said second-named signal receiving members are also plates.

11. An antenna, as defined in claim 10, in which said plates are disposed in planes substantially perpendicular to the axes of said rods.

12. An antenna, as defined in claim 11, in which said second-named plates are slidable relatively to said first-named plates.

13. An antenna, as defined in claim 12, in which said plates are provided with spaced openings, whereby the openings in the second-named plates may be aligned with the openings in the first-named plates for the purpose of adjusting the plates relatively to each other.

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