Dec. 23, 1958 N. C. POWLISON 2,866,195

TELEVISION RECEIVING ANTENNA

Filed Feb. 23, 1954 2 Sheets-Sheet 1

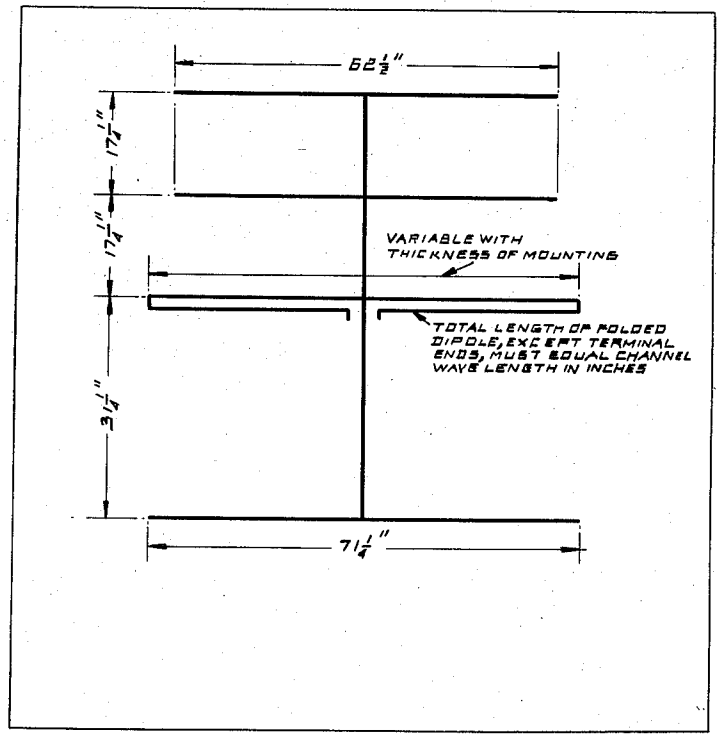


Fig. 1

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2 Sheets-Sheet 2

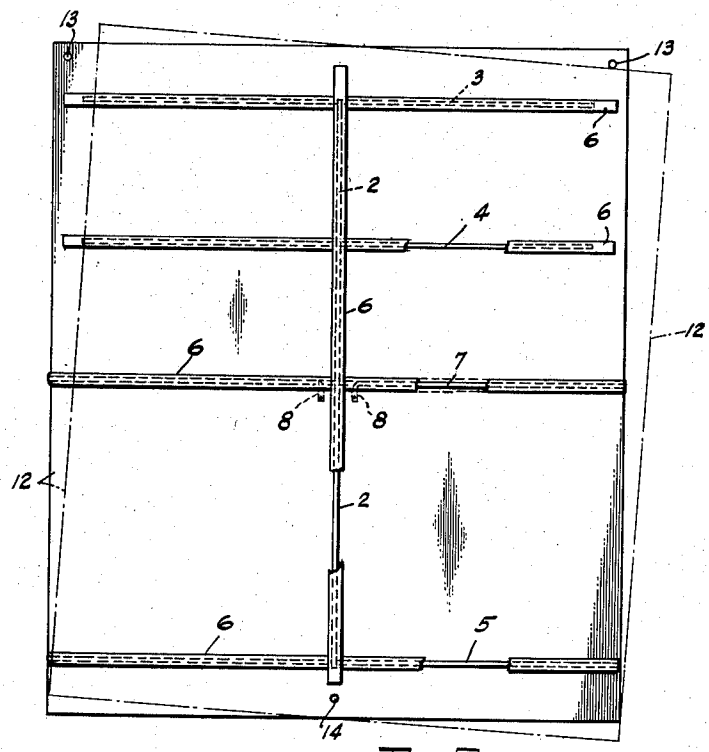


Fig. 2

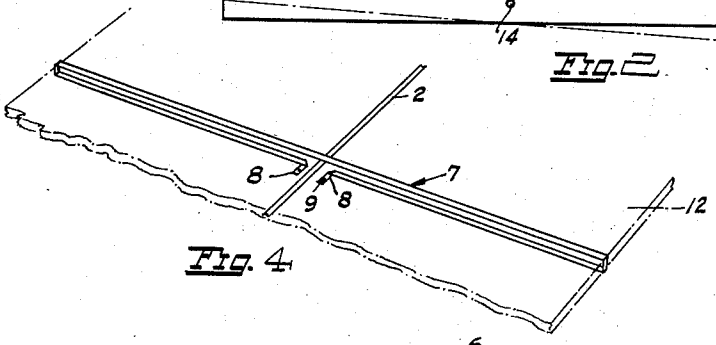


Fig. 4

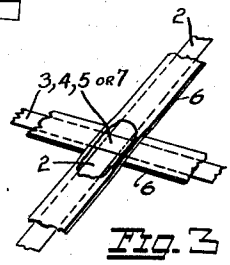


Fig. 3

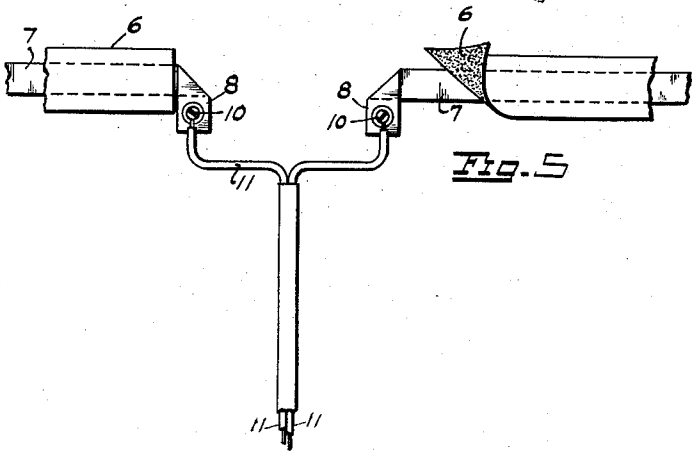


Fig. 5

United States Patent Office 2,866,195 Patented Dec. 23, 1958

2,866,195

TELEVISION RECEIVING ANTENNA

Neil C. Powlison, Longview, Wash.

Application February 23, 1954, Serial No. 411,799

2 Claims. (Cl. 343—803)

This invention relates generally to antennae and more especially to indoor television antennae. It is one of the principal objects of the present invention to provide a simple, efficient, durable and inexpensive television antenna made of metallic tape, such as aluminum or the like, and adaptable for convenient adhesive application to a ceiling, an attic floor or attic ceiling, or to any flat horizontal support made of dielectric material.

A further object of the invention is the provision of an antenna of the character described whose component parts can be marketed in kit form together with a simple chart and printed directions for orienting and inscribing a layout for the completed antenna on a support as aforesaid.

A further object is the provision of a suitable support for the antenna in its entirety which can be quickly and accurately oriented and permanently mounted in any desired indoor location.

A still further object is the provision of a television antenna made of metallic tape whose electric conductance provides high gain on both the high and ultra high frequency bands.

The foregoing and other objects will appear as my invention is more fully hereinafter described in the following specification, illustrated in the accompanying drawings, and finally pointed out in the appended claims.

In the accompanying drawings:

Figure 1 represents a chart having printed thereon an installation diagram, dimensions, and instructions pertaining to the installation of the antenna.

Figure 2 is a top plan view of the antenna applied to a flat, portable and horizontally adjustable support.

Figure 3 is a fragmentary detail view of a typical interconnection of the metallic tapes and their attachment to each other and to a support by adhesive tape.

Figure 4 is a perspective view of a dipole in tape form folded over on itself across the top and bottom surfaces of an adjustable support, a fragment of which is shown in broken lines.

Figure 5 is an enlarged fragmentary detail view of the terminal ends of the dipole and their connection to the lead-in wires.

Referring now more particularly to the drawings:

It is well known that each of the many telecasting stations now in existence operate on different wave lengths. For example, channel 6 operates on a predetermined wave length at very high frequency, while channel 27 operates on a different wave length at ultra high frequency. Accordingly, the chart shown in Figure 1 must be followed to determine the length of the metallic tape to be applied to the selected support. The first element of the antenna to be applied to the support, whether it be a ceiling or floor or the support shown in Figure 2, is the longitudinal strip indicated at **2**. The next two elements, which are necessarily of equal length for the arrangement of the antenna shown, are the two directors **3** and **4**. The directors are laid across the

longitudinal strip in electrical contact therewith and extend outwardly an equal distance from both sides thereof. The next element to be applied, also in electrical contact with the longitudinal strip **2**, is the reflector strip indicated at **5**. As shown in Fig. 3 the elements **3**, **4** and **5** are fastened to the support by means of their respective strips of adhesive tape **6** and the strip **2** is then covered with the tape to also fasten it to the support. The adhesive tape may be of any suitable type such as, for instance, paper tape gummed on one side, Scotch Tape, or the like. The width of the adhesive tape should be twice that of the metallic tape, and I have obtained satisfactory results by using metallic tape one-half inch wide and adhesive tape one inch wide so that an adequate overlap of one-fourth inch is provided on both sides of the tape to securely fasten both tapes to their support. With said elements now fastened in place, the support can be conveniently manipulated for attachment thereto of the dipole generally indicated at **7**. If, for example, the wave length of the telecasting station involved is 137 inches, 139 inches of metallic tape is folded about the support as best shown in Figure 4. Each terminal end of the dipole tape is turned at right angles as at **8** to the under fold thereof a distance of one inch and is apertured as at **9** to receive fastening screws and washers **10** by means of which screws the recommended lead-in wires **11** to the television receiving set are attached to the dipole and the ends of the dipole are secured to the support. A corresponding length of the adhesive tape **6** is applied to the entire length of the dipole, terminating just short of the terminal ends **8** thereof as shown in Figure 5. The vertical spacing between the parallel folds of the dipole is not important so long as they do not come into contact with one another. Therefore, a dielectric support of any desired thickness can be used. This feature enables the antenna to be applied to a ceiling or a floor as aforesaid by merely apparating the folds of the dipole by one or more layers of heavy paper, cardboard, thin plywood, or the like.

The form of support shown in Figure 2 comprises a sheet of thin plywood indicated at **12** having two corner apertures **13** at one of its ends and a central aperture **14** at its opposite end. This support along with the assembled antenna fastened thereto as aforesaid is first attached to a horizontal supporting surface such as a floor or a ceiling or a horizontal framework by a fastening screw extending through the aperture **14**. This screw then serves as a fixed pivot point for swinging the support to either side as shown in broken lines in Figure 2 to accurately orientate the antenna by aligning the horizontal strip **2** with a sight-line to the telecasting station. Following this the support is premanently secured in place by screws extending through the corner apertures **13**. This aligning could also be done by checking a nearby outdoor antenna with a magnetic compass to determine its angularity in degrees from any selected point on the compass. This method of alignment can also be used when inscribing the horizontal strip **2** of the diagram on a floor or ceiling in accordance with the instruction chart.

As shown by way of example only, the dimensions appearing on the chart in Figure 1 are for Channel 6, wherein the directors **3** and **4** must each be 62½ inches long, the reflector **5** 71¼ inches, and the total length of the dipole 139 inches, including its right angular terminal ends indicated at **8**. The two directors must be spaced 17¼ inches from one another and from the dipole and the reflector spaced 31¼ inches from the dipole.

It is to be understood, of course, that the foregoing

dimensions are for one channel only and that they are variable to conform to the wave lengths of different channels.

While I have shown a particular form of embodiment of my invention I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention. Having thus described my invention what I claim as new and desire to protect by Letters Patent is:

1. An antenna for receiving television signals, comprising in combination a rectangular supporting sheet of dielectric material, a strip of electro-conductive tape attached to one side of said sheet substantially throughout the length thereof, a pair of transverse directors and a reflector electrically connected to said strip of electro-conductive tape and arranged in parallel spaced relation to one another on the same side of said sheet, a dipole disposed between said reflector and one of said directors and electrically connected to said strip of tape, said dipole being folded over and under said supporting sheet and terminating on the opposite side of said sheet in two terminals for attachment to lead-in wires of a television receiving set.

2. An antenna as in claim 1 wherein said supporting sheet has a central aperture at one of its ends to receive

a fastening element for pivotally attaching the sheet to a horizontal supporting surface for swinging the sheet to orientate the antenna by aligning said lengthwise strip of electroconductive tape with a sight-line to the telecasting station, the opposite end of the sheet being apertured at both of its corners to receive fastening elements for permanently securing the sheet to said horizontal supporting surface in an orientated position.

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