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(54) **Digital terrestrial TV reception antenna**

(57) Digital terrestrial TV reception antenna comprising a plurality of reflector elements (2) arranged on two converging geometric planes (α,β) and a dipole (4) arranged in the bisecting line (θ) of said geometric planes (α,β). The antenna also comprises a plurality of reflector elements (3) in a central area which, instead of being arranged on said converging geometric planes (α,β), are arranged at points closer to the dipole (4).

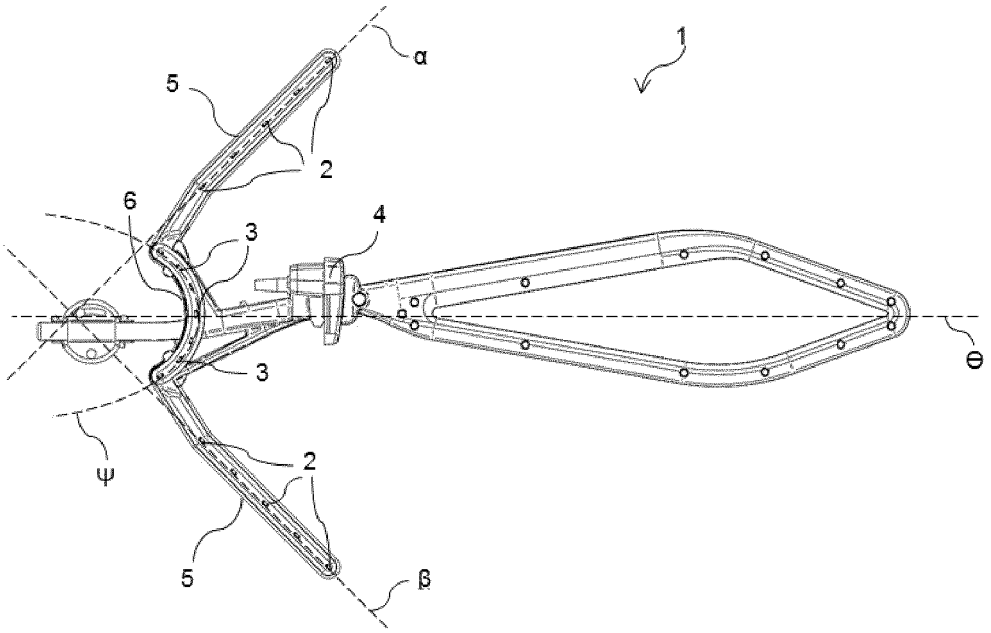

Fig. 2

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Description

TECHNICAL FIELD

[0001] The present invention is related to digital terrestrial TV antennas for receiving UHF broadcasts, and more specifically to constructive details of said antennas.

PRIOR ART

[0002] Digital terrestrial TV reception antennas covering the reception of broadcasts from UHF channels E-21 to E-69, comprised in the 470 MHz to 862 MHz band are known, and they have an impedance of 75 Ω in the entire band.

[0003] Document ES1030975U discloses a terrestrial TV antenna for receiving UHF comprising a reflector, a dipole, two V-shaped support rods forming an arrowhead-shaped contour and a plurality of directing elements distributed in the support rods.

DISCLOSURE OF THE INVENTION

[0004] The object of the invention is to provide a digital terrestrial TV reception antenna as described in the claims.

[0005] The digital terrestrial TV reception antenna of the invention comprises a plurality of reflector elements arranged on two converging geometric planes and a dipole arranged in the bisecting line of said geometric planes. The antenna comprises a plurality of reflector elements in a central area which are arranged at points closer to the dipole instead of being arranged on said converging geometric planes.

[0006] The combination of the reflector elements distributed on the converging geometric planes and the reflector elements closer to the dipole in the central area improves the impedance matching of the antenna and increases its gain. This allows covering, for example, the reception of broadcasts from UHF channels E-21 to E-60, comprised in the 470 MHz to 790 MHz band, and thereby complying with the new characteristics of the DTT antennas.

[0007] Said distribution of the reflector elements also enables reducing the angle of the converging planes, making the antenna more compact.

[0008] These and other advantages and features of the invention will become more evident in view of the drawings and detailed description of the invention.

DESCRIPTION OF THE DRAWINGS

[0009]

Figure 1 shows a perspective view of a first embodiment of the TV antenna according to the invention

Figure 2 shows a side view of the TV antenna of the embodiment of Figure 1.

Figure 3 shows the distribution of the reflector elements of a second embodiment of the TV aerial according to the invention.

Figure 4 shows the distribution of the reflector elements of a third embodiment of the TV aerial according to the invention.

Figure 5 shows a side view of the support structure of the reflector elements of the embodiment of Figure 1.

DETAILED DISCLOSURE OF THE INVENTION

[0010] Figures 1 and 2 show a first embodiment of the digital terrestrial TV reception antenna 1 according to the invention. Said antenna comprises a plurality of reflector elements 2 arranged on two converging geometric planes α and β forming an approximately 90° angle. Said antenna 1 also comprises a dipole 4 arranged in the bisecting line θ of said geometric planes α and β.

[0011] The antenna 1 comprises a plurality of reflector elements 3 in a central area which are arranged at points closer to the dipole 4 instead of being arranged on said converging geometric planes α and β. More specifically, said reflector elements 3 of the central area are arranged on a curved geometric surface Ψ having a cross-section in the form of an arc of an oval, which could also be an arc of a circle.

[0012] Both the reflector elements 2 arranged on two converging geometric planes α and β and the reflector elements 3 arranged in the central area are arranged symmetrically with respect to the bisecting line θ of the geometric planes α and β.

[0013] The antenna 1 also comprises a support structure in which the reflector elements 2 and 3 are arranged. Said structure comprises three support arms 5 for each converging geometric plane α and β in which the reflector elements 2 arranged according to said converging geometric planes α and β are fixed and three support arms 6 in which the reflector elements 3 of the central area are fixed. The support arms 5 are foldable towards the bisecting line θ of the converging geometric planes α and β, as shown in Figure 5.

[0014] A second embodiment and a third embodiment of invention, shown in Figures 3 and 4, differ from the first embodiment by the manner in which the reflector elements 3 of the central area are distributed.

[0015] In the second embodiment shown in Figure 3, the reflector elements 3 of the central area are arranged on two converging geometric planes λ and w.

[0016] In the third embodiment shown in Figure 4, the reflector elements 3 of the central area are arranged on a geometric plane perpendicular to the bisecting line θ of the converging geometric planes α and β.

Claims

1. Digital terrestrial TV reception antenna comprising a plurality of reflector elements (2) arranged on two converging geometric planes (α,β) and a dipole (4) arranged in the bisecting line (θ) of said geometric planes (α,β), **characterized in that** it comprises a plurality of reflector elements (3) in a central area which, instead of being arranged on said converging geometric planes (α,β), are arranged at points closer to the dipole (4).

2. Antenna according to claim 1, wherein the reflector elements (2,3) are arranged symmetrically with respect to the bisecting line (θ) of the converging geometric planes (α,β).

3. Antenna according to claim 1 or 2, wherein the reflector elements (3) of the central area are arranged on a curved geometric surface (Ψ).

4. Antenna according to claim 3, wherein said curved geometric surface (Ψ) has a cross-section in the form of an arc of a circle or an arc of an oval.

5. Antenna according to claim 1 or 2, wherein the reflector elements (3) of the central area are arranged on a geometric plane perpendicular to the bisecting line (θ) of the converging geometric planes (α,β).

6. Antenna according to claim 1 or 2, wherein the reflector elements (3) of the central area are arranged on two converging geometric planes (λ,ω).

7. Antenna according to any of the preceding claims, wherein the converging geometric planes (α,β) of the reflector form an approximately 90° angle.

8. Antenna according to any of the preceding claims, comprising a support structure comprising at least one support arm (5) for each converging geometric plane (α,β) in which the reflective elements (2) arranged according to said converging geometric planes (α,β) are fixed, and at least one support arm (6) in which the reflector elements (3) of the central area are fixed, said support arms (5) in which the reflector elements (2) are fixed arranged according to said converging geometric planes (α,β) being foldable towards the bisecting line (θ) of the converging geometric planes (α,β).

9. Antenna according to the preceding claim, wherein the support structure comprises three support arms (5) for each converging geometric plane (α,β) and three support arms (6) in the central area.

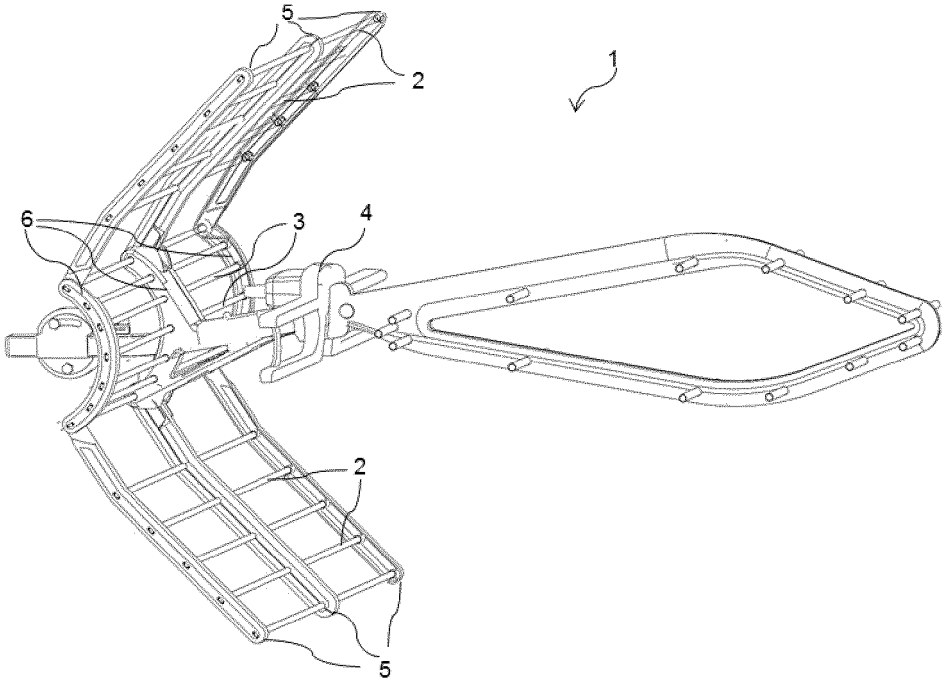

Fig. 1

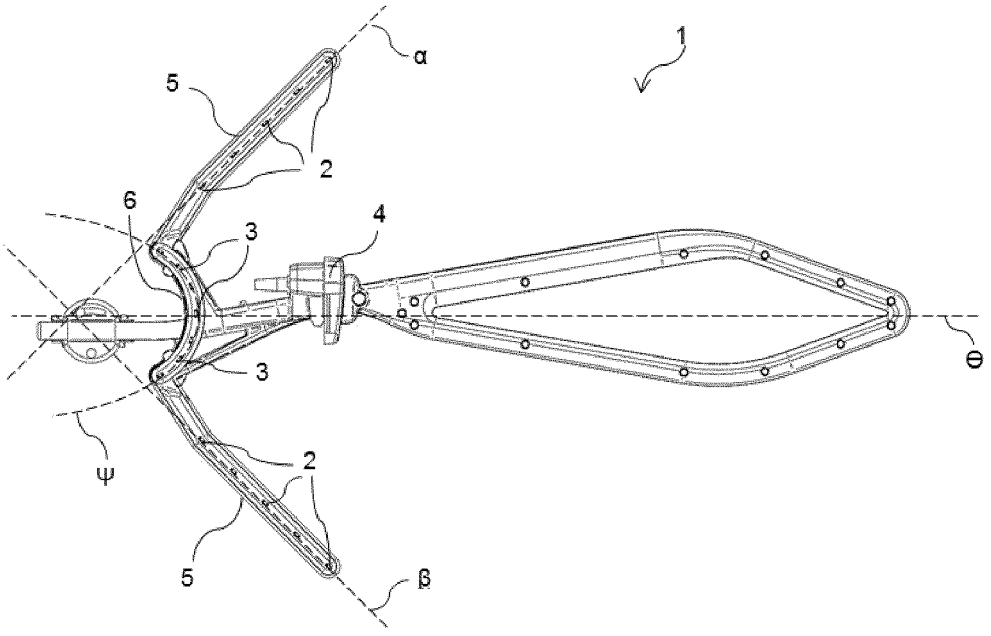

Fig. 2

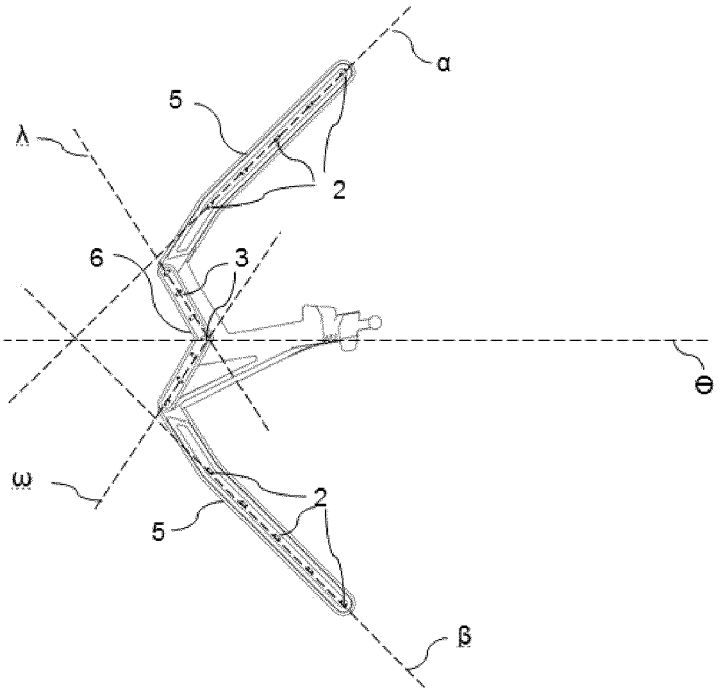

Fig. 3

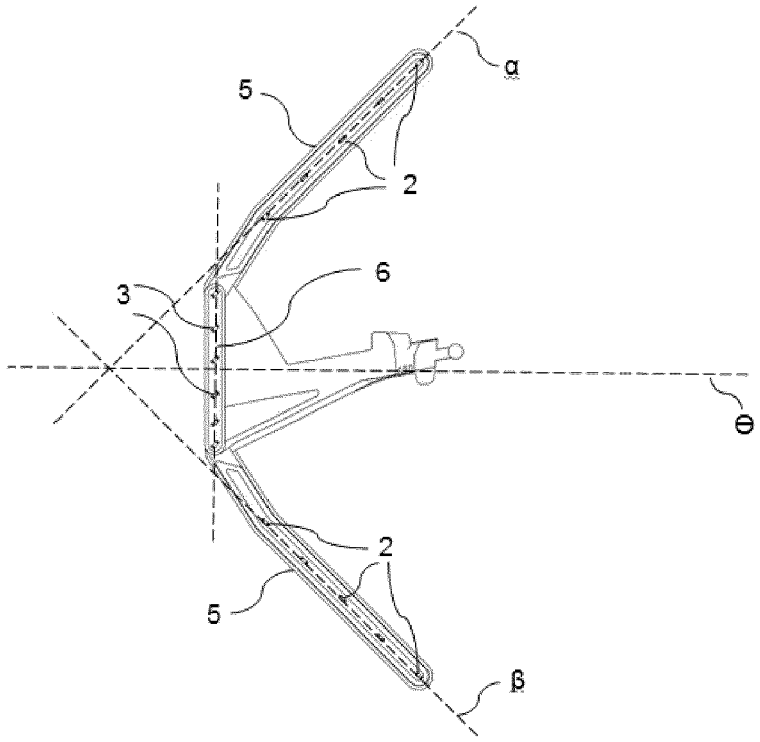

Fig. 4

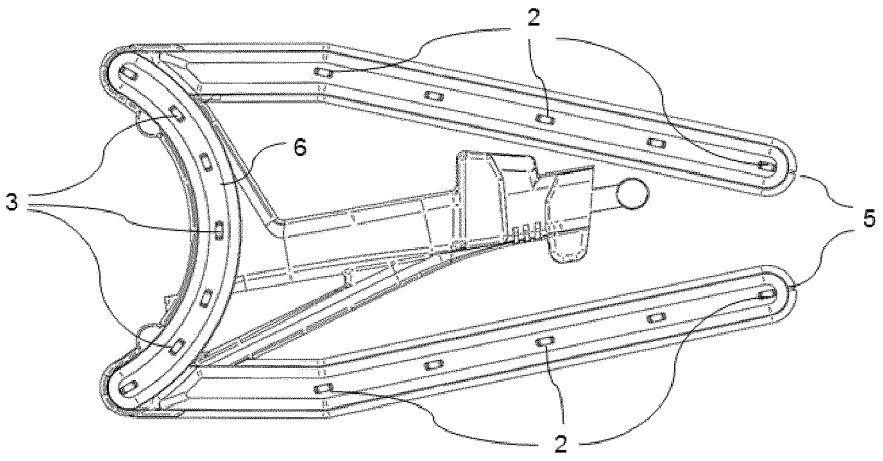

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 13 38 2346

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 19 62 059 U (WILHELM SIHN JR KG [DE]) 15 June 1967 (1967-06-15) * the whole document * -----	1,2,6,7	INV. H01Q19/30
X	FR 2 400 782 A1 (KOLBE & CO HANS [DE]) 16 March 1979 (1979-03-16) * page 7, line 2 - page 8, line 8 * * figures 4,5,6 * -----	1-4,8,9	
X	JP S57 7210 U (.) 14 January 1982 (1982-01-14) * figures 1,2,6,7 * -----	1-4,8,9	
X	"Technische Erfahrung stand Pate Verbesserte erweiterte Superbreitbandantennen", FUBA SPIEGEL,, vol. 7, no. 3/4, 29 April 1962 (1962-04-29), pages 5-11, XP001386327, * the whole document * -----	1,2,5	

TECHNICAL FIELDS SEARCHED (IPC)

H01Q

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 October 2013	Kruck, Peter

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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30-10-2013

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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