Support webs **32**, **34** and **36** are arms which are secured to both the subreflector and primary reflector to support the subreflector with respect to the primary reflector without obstructing or distorting the radiation pattern. It is the configuration of these support webs in association with the balance of the antenna structure which produces the desirable antenna properties. The firm positioning of subreflector **14** at the proper position enhances radiation efficiency.

Support webs **32**, **34** and **36** are each thin in the thickness direction, which is the upright direction in FIG. **3**. They are wide in the lateral direction, which is transverse in FIG. **3**. The webs are positioned in slots in the two reflectors, as is seen in FIGS. **1** and **2** and are secured therein by means of dielectric adhesive. The material of the support webs is of low dielectric loss. Fiber glass in epoxy is a suitable structure. The thickness of the webs is preferably from 0.001 to 0.007 aperture diameters, where the aperture diameter is the diameter of primary reflector **12** perpendicular to its axis. As is seen in FIG. **1**, the reflectors are preferably circular in configuration. This small thickness of the support webs provides little physical obstruction of the aperture represented by the unobstructed forward projected area of the primary reflector. The width of the web **32**, **34** and **36** is preferably from about 0.05 to 0.1 aperture diameters. These thickness and width dimensions provide width to thickness ratios from about 7 to about 100. These dimensions provide stiffness along the length of the support webs and across the width direction, and adequate stiffness in the thickness direction to provide adequate resistance against rotation of the subreflector around the axis.

The webs are cemented into accurately located peripheral slots on the primary reflector and subreflector. They are positioned so that they lie in equiangularly spaced planes which are radial through the axis. In this way, minimized projected area of the webs is provided. The material of the webs is of low electric loss and this characteristic together with the minimal beam obstruction, results in an unobstructed and undistorted radiation pattern of the antenna.

This lamellar support structure of the subreflector permits small torsional movements of the subreflector in relation to the primary reflector. However, the focal distance is firmly and rigidly fixed because there is no freedom of movement in the axial direction. Furthermore, since there is no freedom of movement of the subreflector with respect to the primary reflector in an off axis direction, the optical and dimensional relationship of the feed and reflectors are maintained. The result is a strong, efficient, lightweight antenna structure.

This invention has been described in its presently contemplated best mode and it is clear that it is susceptible to numerous modifications, modes and embodiments within the ability of those skilled in the art and without the exercise of the inventive faculty. Accordingly, the scope of this invention is defined by the scope of the following claims.

What is claimed is:

1. An antenna structure comprising:

a primary reflector having a reflective surface which is shaped as a surface of revolution about an axis, said axis being the axis of said primary reflector, said reflector surface being supported on a foam body, and having an opening through said primary reflector and said foam body on said axis;

a subreflector having a reflective surface which is a surface of revolution about a second axis, with said two axes positioned substantially colinear, said subreflector positioned with respect to said opening in said primary reflector such that radiation reflects on both said primary reflector and said subreflector;

at least three slots in each of said primary reflector and said subreflector, said slots lying substantially on planes passing through said axis of said primary reflector, with respective ones of said slots in said subreflector lying on the same plane through said primary reflector axis as respective ones of said slots in said primary reflector, said slots in said primary reflector extending into said foam body;

a plurality of support webs of low loss dielectric material between said reflectors for maintaining said subreflector at a substantially fixed distance away from said primary reflector and for maintaining said axes so that they lie substantially together, said support webs being of substantial width in a direction normal to said axes and substantially thin in a direction circumferential to said axes, and having a width to thickness ratio between about 7 and about 100, the thickness of said webs being on the order of between 0.001 and 0.007 times the aperture diameter where the diameter of said primary reflector is the aperture diameter of said antenna, said support webs being mounted in said slots.

2. The antenna structure of claim **1** wherein the width of said webs is between 0.05 and 0.1 times the aperture diameter.

3. The antenna structure of claim **2** wherein there is an axial opening in said primary reflector and said subreflector has a focus on said axis at said opening and wherein a radiation device is positioned at said opening adjacent said focus.

4. The antenna structure of claim **1** wherein said support webs comprise a substantially homogeneous composition of glass fibers embedded in an epoxy binder.

5. An antenna structure comprising:

a primary reflector having a reflective surface which is shaped as a surface of revolution about an axis, said axis being the axis of said primary reflector, said reflector surface being supported on a foam body, said reflector surface having a diameter across said axis which is the aperture diameter, and an opening through said primary reflector and its body on said axis;

a subreflector having a second surface of revolution about said axis, said axis forming a central axis of said antenna structure, said subreflector facing said opening in said primary reflector so that radiation reflects on both said primary reflector and said subreflector;

at least three slots in each of said primary reflector and said subreflector, said slots lying substantially on planes passing through said axis, with one of said slots in said subreflector lying on the same plane through said axis as one of said slots in said primary reflector, said slots in said primary reflector extending into said foam body;

at least three support webs of low electric loss material rigidly mounted in said slots using low electric loss adhesive material and extending into said foam body, said support webs having a width to thickness ratio of between about 7 and about 100, said support webs being secured in said slots so that each of said support webs lie in a plane passing through said axis so that said support webs firmly support said subreflector with respect to said primary reflector.

6. The antenna structure of claim **5** wherein said webs comprise epoxy impregnated fiberglass.

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