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3,101,459

WAVE GUIDE COAXIAL ADAPTER

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Fig. 1.

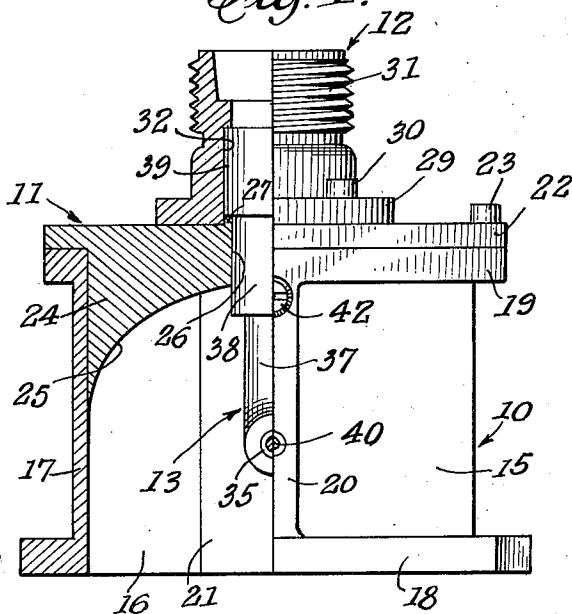


Fig. 2.

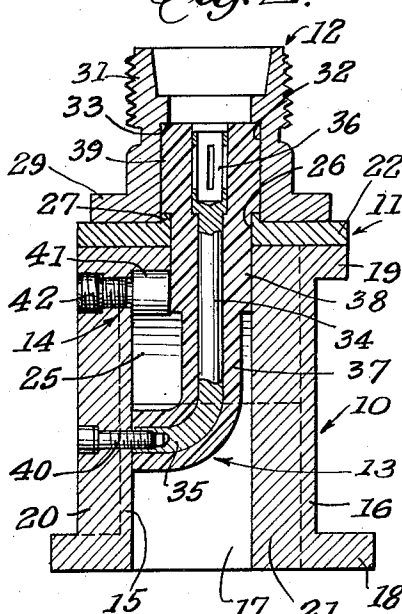


Fig. 3.

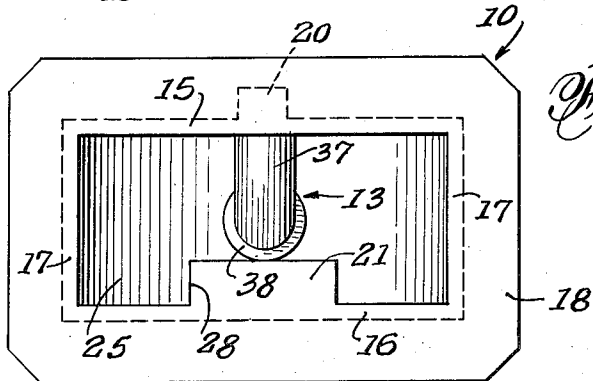
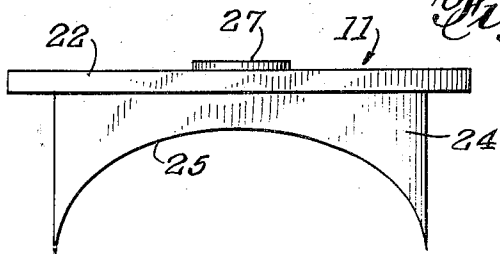


Fig. 4.



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WAVE GUIDE COAXIAL ADAPTER

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8 Claims. (Cl. 333-33)

This invention relates to a wave guide coaxial adapter.

An object of the present invention is to provide a device of the character referred to that embodies a novel construction that, by grounding the pickup probe to the adapter housing is rendered both more efficient and considerably more compact than prior devices for the same purpose.

Another object of the invention is to provide a wave guide coaxial adapter that, because of the compactness above mentioned, has a substantially smaller cavity.

A further object of the invention is to provide an adapter of the character above discussed that embodies an improved construction in that the grounding of the probe is made to either the top or the bottom wall of the adapter body.

This invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description, and which is based on the accompanying drawing. However, said drawing merely shows, and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

FIG. 1 is a plan view, in quarter section of a wave guide coaxial adapter according to the present invention.

FIG. 2 is a cross-sectional view taken along the axis of the connector.

FIG. 3 is an end view.

FIG. 4 is a side elevational view of a wave reflector used in the construction.

The present wave guide coaxial adapter comprises, generally, a body 10, a wave reflector 11 connected to the body, a connector 12 mounted on the reflector and adapted to be connected in a wave guide system, a center conductor assembly 13 extending from said connector in grounded engagement with the body, and a wave-tuning means 14 carried by the body.

The body 10 is metallic and is formed as a tubular member of generally rectangular form, to have relatively wide top and bottom walls 15 and 16 and narrower side or end walls 17, said walls defining a rectangular cavity, as can be seen. An outturned mounting flange 18 is provided at one end of the housing, and a connection flange 19 is provided at the opposite end. The wall 15, on the outside thereof between the flanges 18 and 19, is provided with a rib 20 centrally of the width of wall 15, and the wall 16, on the inside thereof, is provided with a central rib 21 that is substantially wider than rib 20. It will be seen that the mentioned rectangular cavity is interrupted on one side by rib 21, and therefore, is narrower across the middle than at the end adjacent the walls 17.

The wave reflector 11 is a metallic member that comprises a lid 22 that is secured to the flange 19 by screws 23, and a reflector body 24 that fits within the opening of the body 10 and terminates in a curved end face 25 that serves as a wave reflector. Said reflector 11 has a

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central opening 26, the outer end of which is encircled by a flange 27; said reflector body snugly fits the body 10, as shown in FIG. 1. It will be clear that said reflector body has a groove 28 that conforms to the central rib 21 of the body 10, and is also notched on the opposite side of said groove to accommodate the wave-tuning means 14.

The connector 12 is also metallic and is formed as a fitting with a flange 29, that is fastened by screws 30 to the lid 22, and has an externally threaded tubular extension 31. A counterbore 32 in said fitting fits over and centers on the flange 27 of the wave reflector 11. Said counterbore is defined at one end by said flange 27 and by an annular shoulder 33 at the other end.

The center conductor assembly 13 comprises a metal pickup probe in the form of a rod 34 that has a bent end 35 and an opposite end 36 that is formed as a pin-receiving socket. A Teflon tube 37 encloses the rod 34 and generally conforms to the shape thereof. As shown, said tube is enlarged at 38 to fit the opening 26 in the reflector 11, and further enlarged at 39 to fit the counterbore 32 between the flange 27 and shoulder 33. The remaining portion of the Teflon tube 37 extends in the cavity of the device and terminates at the terminal end of the bend 35 of the probe rod. By fixing said rod and by means of a screw 40 that passes through the rib 20 from the outside and enters a threaded seat in said rod end, the center conductor assembly has a firm ground connection to wall 15. This wall may be either the top or the bottom wall of the assembly, depending on the installation of the adapter. Of course, the Teflon enlargement 39 cooperates with the fastener screw 40 to assure a firm position of the assembly 13 in the adapter.

The wave-tuning means 14 is a well-known means and is here shown only to complete the present construction and to show that the pin 41 of said means 14 may be adjusted for tuning of the device through the outer rib 20 and that said rib carries a lock screw 42 by means of which the adjustment may be locked.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the invention, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. Therefore, it is not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described this invention, what is claimed and desired to be secured by Letters Patent is:

1. A wave guide coaxial adapter comprising a rectangular body having a cavity therein defined by parallel upper and lower walls and narrower side walls, a wave reflector element closing an end of said body and having a concave wave-reflecting face that is disposed in said cavity, and a pickup probe extending through said reflecting element and face between and parallel to the mentioned upper and lower walls, said probe having a bent end directed toward one of said latter walls, and means to secure said end of said latter wall.

2. A wave guide coaxial adapter according to claim 1 in which said body is metallic, and said probe comprises a metal rod with a Teflon cover thereover, the mentioned securing means grounding the rod end to the body and the Teflon cover extending along the entire length of the rod and insulating the rod from both the body and the wave reflector element.

3. A wave guide coaxial adapter according to claim 2 in which an outer rib is provided on said one wall, and the securing means being carried by said rib.

4. A wave guide coaxial adapter comprising a metallic two-part body having a cavity therein defined by parallel upper and lower walls and narrower side walls,

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a transverse wall across one end of the body, a concave wave-reflecting face in said cavity on said end wall and directed toward the other end of the body, said body having a central opening in said end wall, a Teflon-covered probe rod extending through said opening beyond said reflecting face between and parallel to the upper and lower body faces, said probe rod having a Teflon-covered bent end directed toward one of said latter walls, and means to both secure and ground the bent end of the probe rod to the latter wall.

5 A wave guide coaxial adapter according to claim 4 in which the last-mentioned wall is provided with a thickening rib, the securing means being carried by said rib.

6 A wave guide coaxial adapter according to claim 4 in which an internal rib is provided on the wall opposite to the bent end of the probe rod, said rib extending into close proximity to the parallel portion of the Teflon-covered rod.

7 A wave guide coaxial adapter comprising a rectangular body having a cavity therein defined by parallel upper and lower walls and narrower side walls, a wave deflector element closing an end of said body and having a wave-reflecting face that is disposed in said cavity, and a pickup probe extending through said reflecting element

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and face between and parallel to the mentioned upper and lower walls, said probe having a bent end directed toward one of said latter walls, and means to secure said end to said one latter wall, the mentioned wave-reflecting face being concave and transversely disposed in relation to the probe that extends therethrough.

8 A wave guide coaxial adapter according to claim 7 provided with a wave-tuning means, said latter means being mounted in the wall to which the bent end of the probe is secured.

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