

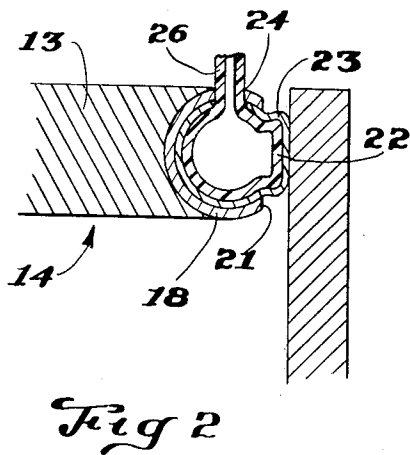
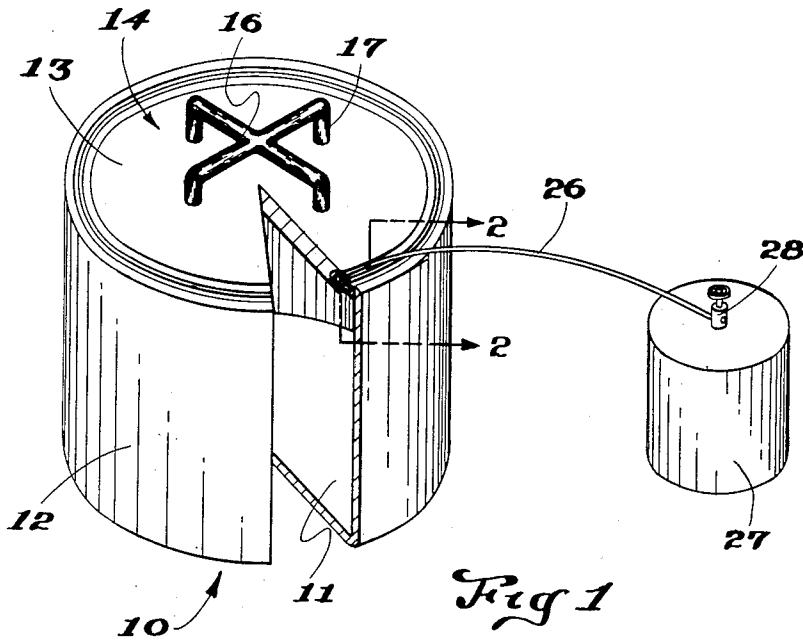
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EXPANSIBLE CONDUCTIVE SEAL FOR RESONANT CAVITIES

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EXPANSIBLE CONDUCTIVE SEAL FOR
RESONANT CAVITIES

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1 Claim. (Cl. 339—35)

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This invention relates in general to shorting and holding means, and in particular to a method for maintaining good electrical contact and supporting a disc within a cylinder.

It is sometimes desirable to build a relatively large tunable resonant cavity and a shorting plunger may be used to tune it by moving in and out of the cavity. Good electrical contact must be maintained between the cylinder and the plunger.

It is an object of this invention, therefore, to provide a shorting disc with an expansible seal about its periphery so that it may be moved relative to a cylinder and fastened by the seal to make good electrical contact.

Another object of this invention is to provide an expansible seal about the periphery of a shorting plunger to obtain good electrical contact between the plunger and a cylinder.

Yet another object of this invention is to mechanically support a shorting plunger within a cylinder by means of an expansible seal.

A feature of this invention is found in the provision for a disc mounted with an expansible seal mounted about its periphery receivable within a cylinder and which has pressure means connected with the expansible seal to control movement of the plunger relative to the cylinder.

Further features, advantages and objects of this invention will become apparent from the following description and claim when read in view of the drawings, in which:

Figure 1 illustrates the disc-shaped plunger of this invention mounted in a cylinder; and,

Figure 2 is a sectional view taken on line 2—2 of Figure 1 illustrating in detail the seal of Figure 1.

Figure 1 illustrates a cylinder 10 which has a bottom 11 and side walls 12. The cylinder 10 might form a portion of a resonant cavity, for example. A shorting plunger or disc 13 is received within the upper end of the cylinder 10 and is supported on the cylinder walls 12 by holding means 14. An X-shaped handle 16 is mounted by standoffs 17 to the top of disc 13.

The holding means 14, as shown in section in Figure 2, comprises a crescent-shaped member 18 which is attached to the crescent-shaped periphery of the disc 13. The member 18 might be formed, for example, by mounting a circular tube about the edge of the disc 13 and then grinding the outer edge of the tube until an opening 21 is formed.

A rubber tube 22 is inserted into opening 21. Tube 22 is surrounded by webbing 23. The web-

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bing 23 might be of copper or of any other material which is a good electrical conductor. An opening 24 is formed in the side of member 18 and an inlet spout 26 is connected to the rubber tube 22 through the webbing 23. The inlet tube 26 is connected to a high pressure source 27 which might contain, for example, compressed air. A valve 28 is connected to the upper end of the pressure chamber 27 to allow the pressure within the tank 27 to communicate with the tube 22.

In operation the disc 13 is manually inserted into the cylinder 10 by using the handle 16. It is to be understood that the disc 13 is to be made of conducting material such as copper or silver plated metal. When the disc is approximately in the right position the valve 28 may be opened to allow the pressure within the tank 27 to be exerted on the tube 22. The tube 22 will be deflected with the webbing 23 through the opening 21 until it engages the side walls 12 of cylinder 10. The pressure exerted on the tube 22 will be sufficient to support the weight of the disc 13 and hold it fixed relative to the cylinder 10.

The valve 28 in one position connects the tube 22 with the compressed air within tank 27 and in a second position connects the tube 22 to atmospheric pressure. When the valve 28 is moved to connect the tube 22 to atmospheric pressure, the high pressure within the tube 22 falls and the deflected portions of tubes 22 and webbing 23 return to their substantially circular shape thus allowing the disc to be freely moved up and down the side walls 12.

It is seen that this invention provides means for maintaining electrical contact between the side walls of a cylinder and a movable shorting plunger or disc while simultaneously providing mechanical support for the disc.

Although the invention has been described with respect to preferred embodiments thereof it is not to be so limited as changes and modifications may be made therein which are within the full intended scope of the invention as defined by the appended claim.

I claim:

Means for making electrical contact between a shorting disc and a cylinder comprising, an annular crescent-shaped member attached to the periphery of said disc with the open side of the crescent facing outward from the disc, an impervious endless flexible tube received within said crescent-shaped member, flexible webbing of electrical conducting material covering said impervious tube, an inlet tube fluidly connected with said impervious tube and passing through openings

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formed in said crescent-shaped member and said webbing, and a high pressure source connected to said inlet tube to apply the pressure to said impervious tube.

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