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S. J. KOCH ET AL
CONNECTOR FOR VACUUM TUBES

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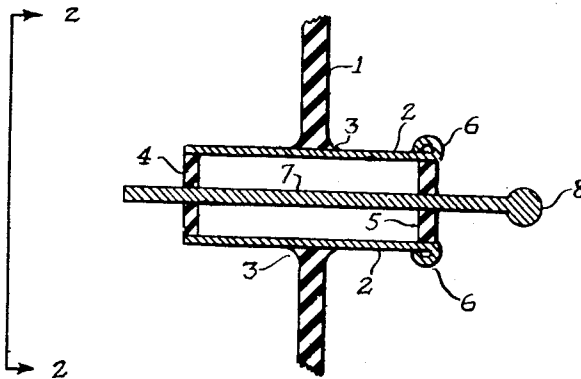


FIG. 1

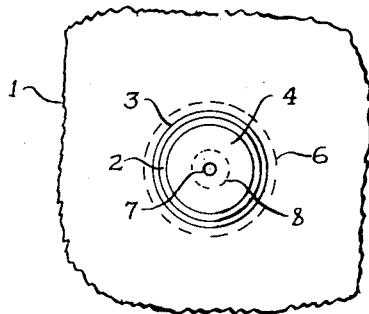


FIG. 2

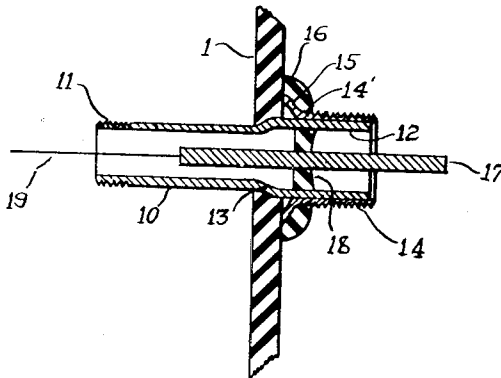


FIG. 3

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CONNECTOR FOR VACUUM TUBES

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3 Claims. (Cl. 174-152)

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This invention relates to connectors that are adapted for making electrical connections through insulating material. It is particularly useful for coaxial cables.

They are particularly useful for making connection from the outside to electrical devices that are located in a vacuum. Such a connector is provided with a passageway for an electrical conductor which is hermetically sealed thereto and electrically insulated therefrom. The connectors are hermetically sealed in a wall of the vacuum space and may be connected to deflection plates of a cathode-ray tube, for example.

In carrying out the invention a metal tube is provided and hermetically sealed in a wall of insulating material and extends through said wall, preferably extending some distance on each side of said wall. This metal tube is provided with insulating material on the inside thereof which closes the tube against passage of air and, at the same time, supports a metal conductor which is insulated from the metal tube and is hermetically sealed in the insulating material.

The invention may be understood from the description in connection with the accompanying drawing, in which—

Fig. 1 is a vertical section showing the device installed in a wall of insulating material partly broken away;

Fig. 2 is an end view of Fig. 1 from the direction indicated by the line 2-2; and

Fig. 3 is a vertical section of a modification.

In the drawing, reference character 1 indicates a wall of insulating material which may, for example, be the wall of a glass cathode-ray tube.

A metal tube 2 is hermetically sealed in the wall 1 by melting the insulating material, when of glass, as shown at 3 to provide an extended contacting surface between the insulating material 1 and the metal 2. Discs 4 and 5 of insulating material are hermetically sealed in the tube 2 at or near opposite ends thereof. The outer end of the tube 2 is formed into a flange 6 by rolling the edge, thus providing a connector for the outside lead of the coaxial cable terminal of the usual sort that can be snapped over this flange or rim 6.

A metal connector 7 is hermetically sealed along the central lines of discs 4 and 5 so as to be securely held in position. The connector 7 is provided with a ball end 8 for the snap connector ordinarily provided at the end of the center lead of the coaxial cable.

The metal tube 2 provides a shield for the connector 7 so that it may be used for making con-

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nection from sources of ultra high frequencies to a conductor such as a deflection plate, for example, located inside of the vacuum tube.

In the embodiment shown in Fig. 3 a metal tube 10 is sealed in the glass wall 1. Its inner end 11 is threaded and its outer end 12 is enlarged. An intermediate conically shaped portion 13 is sealed in the wall 1 of the glass tube as described above.

An externally threaded metal sleeve 14 is placed on the enlarged portion 12 and is provided with an annular extension or rim 15 that rests against the glass wall 1. This sleeve fits tightly around the portion 12 and plastic adhesive material 16 is applied to the rim 15 all the way around and may contact with some of the threads 14' and sleeve 14.

A coaxial metal pin 17 for the central lead of a coaxial cable is hermetically sealed and maintained in place along the center line of tube 10 by means of glass or other rigid insulating material 18. Lead 19 is connected to the pin 17 for making connection with the center lead of a coaxial cable, the threads 11 being for making secure connection to the outer lead.

The enlarged end portion 12 of tube 10 increases the length of the leakage path through the air between the pin 17 and tube 10 at the portion 12.

What is claimed is:

1. A connector for connecting a coaxial cable to a device located in a vacuum tube having a glass wall, said connector comprising an integral metal tube hermetically sealed in said glass wall substantially at equal distances from the ends of said metal tube, a disc of insulating material hermetically sealed in said metal tube, said metal tube extending outside of said vacuum tube sufficiently to enable the outside lead of a coaxial cable to be attached thereto and having a portion of larger external diameter than that of the remaining portion of said metal tube for said lead to be attached thereto, a metal conductor for connection to the inner conductor of said cable anchored in said disc of insulating material and extending outwardly beyond the outer end of said metal tube.

2. The connector of claim 1 in which the outer end of said outwardly extending metal tube is formed into a rim to provide connection to the outer lead of a coaxial cable.

3. The connector of claim 1 in which the outer end of said outwardly extending metal tube is provided with an outwardly threaded metal sleeve having a rim resting against said glass wall, and

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plastic adhesive material applied to said rim and the wall of said tube.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,310,054	Brown	July 15, 1919
1,658,651	Prindle	Feb. 7, 1928
1,775,530	Jansson	Sept. 9, 1930

Number
1,870,959
2,056,861
2,100,187
2,147,418
2,190,302
2,197,511
2,318,435
2,323,148
2,332,529
2,335,041
2,400,364
2,402,927
2,408,271

4

Name	Date
Morrison	Aug. 9, 1932
Maartens et al.	Oct. 6, 1936
Handrek	Nov. 23, 1937
Bahls	Feb. 14, 1939
Waldschmidt	Feb. 13, 1940
Scharfnagel	Apr. 16, 1940
Stupakoff et al.	May 4, 1943
McLaughlin	June 29, 1943
Reppert	Oct. 26, 1943
Bruno	Nov. 23, 1943
Mittermaier	May 14, 1946
Stupakoff	June 25, 1946
Rigrod et al.	Sept. 24, 1946