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1,648,605

CONNECTER

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Fig. 1.

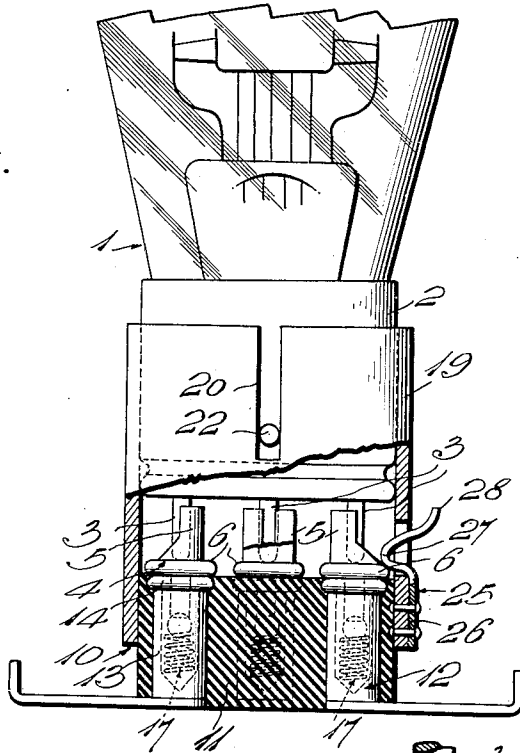


Fig. 2.

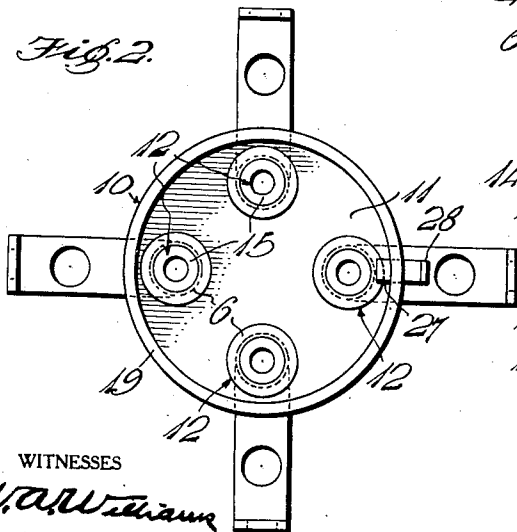


Fig. 4.

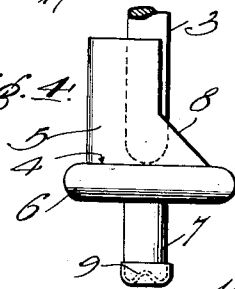


Fig. 5.

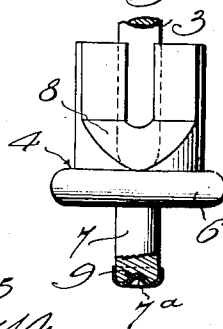
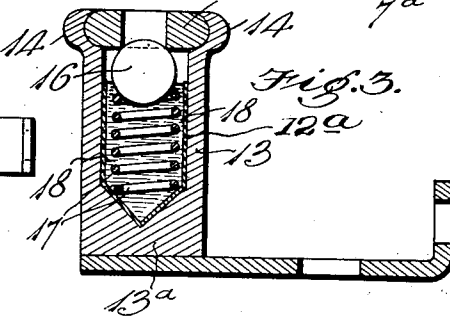


Fig. 3.



WITNESSES

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CONNECTER.

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This invention relates to connectors especially adapted for use in connecting the vacuum tube of radio apparatus to their sockets.

is tinned as at 7^a to provide for an unbroken connection between it and the mercury later to be described.

5 The object of the invention is to provide a connector of this character which affords a secure though readily releasable mechanical connection between the tube and its socket and which is organized and adapted to utilize mercury as the electrical connecting medium between the terminals of the socket and the terminal of the vacuum tube whereby to provide an unbroken metallic circuit for the current.

15 A further object of the invention resides in the provision of a connector having these advantages and capacities and which is of simple and durable construction, reliable and efficient in operation and easy and comparatively inexpensive to manufacture.

20 Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming a part of this specification, and in which:

30 Figure 1 is a fragmentary view partly in transverse vertical section and partly in elevation showing a vacuum tube and socket embodying the present invention.

Figure 2 is a plan view of the socket shown in Fig. 1.

35 Figure 3 is a detail sectional view of one of the terminals of the socket.

Figure 4 is a detail view in elevation of one of the terminals of the vacuum tube, and,

40 Figure 5 is a view in elevation looking to the left of Fig. 4.

Referring to the drawings the numeral 1 designates generally a vacuum tube which has the usual base 2 from which the four terminals 3 project. Adapters designated generally at 4 are provided on the terminals. Each adapter includes a sleeve like body portion 5 fitted on and soldered to its terminal. Around the lower portion of its periphery the body portion of each adapter is formed with a rib 6 and below the rib an axial and reduced extension or tip 7 is formed on the body portion. The body portion 5 is partially cut away as at 8 to facilitate soldering. The lower end of each tip 7 is formed with a conical recess 9. The tip 7

The socket provided for the vacuum tube 00 is designated generally at 10 and comprises a hard rubber body portion 11 in which terminals designated generally at 12 are moulded. Each terminal 12 comprises a hollow cylindrical body portion 13 having its 65 lower end closed as at 13^a and having a curved flange 14 around its upper open end. In the flange 14 an annular leather washer 15 is snugly fitted and held and provides a valve seat for a ball valve 16 arranged in 70 the body portion 13 and held against the inner side of the washer by means of an expansible coil spring 17. A body of mercury designated at 18 is provided within the hollow body of each terminal 12. 75

The rubber body portion 11 is moulded within a metallic shell or casing 19 which extends up above the body as shown in Fig. 1. A vertical slot 20 is provided in the casing 19 and receives a laterally projecting pin 22 80 fixed to the base of the vacuum tube.

One or more resilient catches 25 are provided, each catch 25 having an attaching portion 26 riveted to the shell 19, a U-shaped body portion 27 extending in through 85 an opening provided therefor in the shell 19 and engageable with the rib 6 and a finger piece 28 which permits retraction of the body portion.

When the vacuum tube is inserted in its 90 socket the tips 7 of the adapters depress the balls 16 and the tips become immersed in the mercury in the hollow bodies 13. The recessed lower ends of the tips form seats for the balls and insure their movement down 95 into the hollow body portions 13 and prevent the balls from becoming wedged between the tips and the inner walls of the body portions 13. The pin and slot 22 and 20 and the spring catch 28 positively secures 100 the vacuum tube in its socket. The mercury affords an unbroken metallic circuit and is shut off from the air. The opening in the leather washer 15 is just large enough to admit the tip 7. When the vacuum tube is removed the ball valves 16 automatically 105 shut off the mercury from the air.

The socket terminal 12 has the inner periphery of its hollow body portion tinned, as indicated at 12^a in Figure 3. 110

Due to the tinning of the cooperable terminals, the terminals will not be destroyed

by continued amalgamation and yet the mercury coheres to the terminals in such a manner as to exclude air and provide for a continuous and unbroken metallic connection.

- 5 When a metal is tinned, that is coated with tin, a film of the tin alloys with the metal at the juncture of the metal and tin, and while the tin amalgamates with the mercury this film of alloy will not, and holds the
10 amalgamated tin thereto. The tinned terminals could not be replaced by a metal which entirely resisted the action of the mercury because then the advantage of a continuous unbroken metallic circuit would not be had
15 as a film of air would be present between such a metal and the mercury.

I claim:—

1. A connector for use with a vacuum tube and its socket comprising cooperable metal
20 terminals carried by the tube and socket, said terminals being tinned, and a body of mercury between the terminals.

2. In a connector for use with a vacuum tube and its socket, interfitting terminals
25 carried by the tube and socket, one of the terminals being hollow, a body of mercury contained in hollow terminal and affording an unbroken metallic circuit between the terminals, said terminals having the portions
30 thereof which contact with the mercury tinned and means for shutting out air from the mercury.

3. In a connector for use with a vacuum tube and its socket, interfitting terminals
35 carried by the tube and socket, one of the terminals being hollow, a body of mercury

contained in hollow terminal and affording an unbroken metallic circuit between the terminals, said terminals having the portions thereof which contact with the mercury
40 tinned, means for shutting out air from the mercury, and comprising a yieldable valve seat and a spring seated ball valve co-operable with the valve seat.

4. In a connector for use with a vacuum
45 tube and its socket, terminals on the vacuum tube having tips, hollow terminals on the socket having outwardly curved flanges, annular yieldable washers in said flanges, mercury in the hollow bodies, and spring
50 projected balls engageable with the washers, the tips being insertable through the washers and being adapted to unseat the balls, the tips being immersed in the mercury when the terminals are connected, the tips and the portions
55 of the hollow terminals contacting with the mercury being tinned.

5. In a connector for use with a vacuum tube and its socket, terminals on the vacuum tube, said terminals having tinned tips, hollow
60 internally tinned terminals on the socket having openings, yieldable washers mounted on the hollow terminals around said openings, spring projected balls loosely movable in the hollow terminals and engageable with
65 the washers, the tips being insertible through the washers and having cup-shaped recesses to engage and unseat the balls and hold them centered in the hollow terminals, the tips being immersed in the mercury when the terminals
70 are connected.

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