Nov. 2, 1948. D. JACKSON 2,453,015

SOCKETS PRIMARILY FOR RADIO VALVES AND THE LIKE

Filed Sept. 25, 1946

Fig. 1.

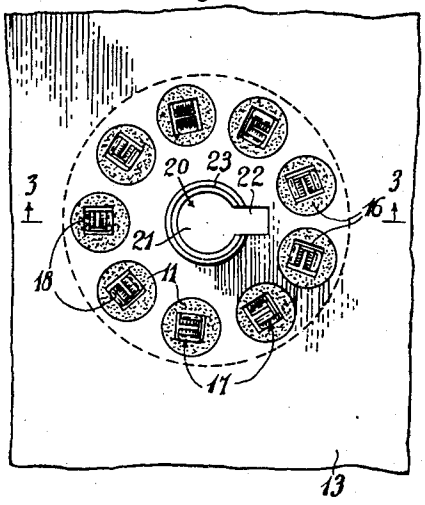


Fig. 2

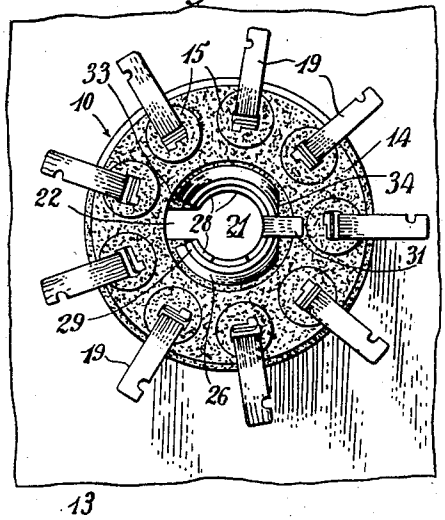


Fig 3

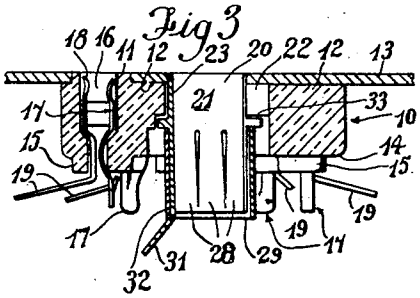
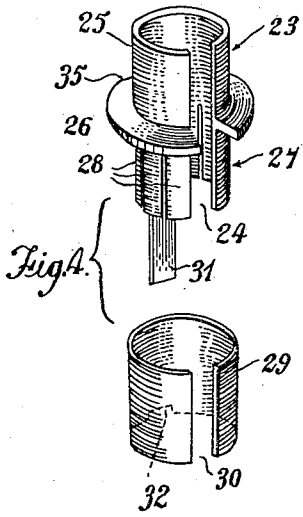


Fig. 4.



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SOCKET PRIMARILY FOR RADIO VALVES AND THE LIKE

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In Great Britain August 23, 1945

2 Claims. (Cl. 173—328)

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This invention relates to sockets primarily designed as holders for radio valves and the like, which devices are commonly known as "valve holders" although such devices and devices of similar character are also often used as holders or sockets for coils, condensers and other electrical equipment. This invention provides a valve holder or like socket of simple construction, which has few parts and has improved and simple means for fixing the socket to a supporting plate or panel such as a chassis of a radio or other electronic apparatus.

The socket according to this invention comprises a one-piece body of insulating material, preferably a moulding, having a series of pin-receiving contact elements disposed in apertures in the body, the latter being formed on one side with a series of bosses through which the apertures extend, which bosses are adapted to enter or fit in a corresponding series of apertures in a metallic supporting plate such as a panel or chassis, to which the contact-carrying body is directly secured by a rivet inserted through a substantially central hole through the body and an aligned aperture in the supporting plate. The engagement of the bosses with their apertures in the supporting plate locates the socket against rotational displacement and the rivet firmly fixes the socket to the plate. The bosses also provide adequate insulation between the contact elements and the adjacent metal of the supporting plate. The bosses may outstand from the body by approximately the thickness of the supporting plate, so as to be substantially flush with the face thereof when the socket is fixed in position.

By piercing the metal of the supporting plate with only the described apertures which are necessary for entry of contact pins into the socket and for receiving the fixing rivet, instead of making a large hole in the plate to receive the socket, the metal of the supporting plate is retained between the contact elements by the present mode of construction so that the supporting plate effectively screens the socket as a whole electrostatically and provides electrostatic screening between adjacent contact elements. The rivet also serves as an electrostatic screen between contact elements arranged at opposite sides of the rivet.

The rivet is preferably hollow and adapted to serve as a locating guide for receiving a guide spigot on the valve or other device to be plugged into the socket. The rivet may be adapted to make electrical connection with a valve spigot which is in electrical connection with a metal envelope or other metal shield used in the valve

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construction for earthing the same. The rivet-receiving hole in the insulating body and the corresponding aperture in the metal supporting plate may be of a non-circular shape, e. g., a keyhole shape, to cooperate with a similarly shaped spigot key on the valve or other device to ensure that the latter is plugged into the socket in the correct orientation. The hollow rivet may be formed with a corresponding cross-sectional shape, or it may be of split character conforming only to part of the keyhole or like shape.

In order that the invention may be more fully comprehended and readily carried into practice, an embodiment thereof will now be described with reference to the accompanying drawings, in which

Fig. 1 shows a face view of a fragment of supporting plate to which is fixed a socket exemplifying the invention.

Fig. 2 is a rear view of the assembly depicted in Fig. 1.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1, and

Fig. 4 shows in perspective the rivet and its spring collar utilised in the assembly.

The illustrated socket has an insulating body 10 which is shown as a plate of circular disc form, the body being made in one piece of insulating material such as a synthetic resin or like plastic, a ceramic material, glass or other vitreous material. Preferably, the body is moulded from a suitable plastic such as a polythene plastic. The body 10 is formed with a ring of bosses 11 which outstand from its upper surface or face 12 (Fig. 3) by approximately the thickness of the metallic supporting plate 13, and at the rear or lower surface 14 of the body are also formed a ring of bosses 15 in alignment respectively with the bosses 11. Also, the body 10 is formed with a series of holes 16 (one of which is more clearly seen in Fig. 3) which extend through the thickness of the body between its faces 12 and 14 and also through the bosses 11 and 15, with which the holes 16 are aligned. The holes 16 respectively accommodate contact elements 17 which are suitably fixed in position in the body. These contact elements may be of any suitable form and fixed in their holes in any suitable manner. The contact elements shown are of a construction disclosed in my copending application Serial No. 686,170 filed July 25, 1946 for "Sockets primarily for radio valves and the like." The contact elements 17 provide pin-receiving portions 18 housed in the holes 16 and positioned to receive valve pins or other contact pins inserted

into the socket through bosses 11, and terminal portions 19 which protrude through the bosses 15. These latter bosses assist in providing a good insulation spacing between the terminal portions 19 of the contact elements, although the bosses 15 are not absolutely essential and may be omitted if desired. The insulating body 10 is further formed with a keyhole aperture 20 therethrough, comprising a cylindrical portion 21 concentrically arranged within the ring of holes 16, and a slot 22 disposed eccentrically.

The metallic supporting plate 13 is pierced with a ring of holes corresponding to the bosses 11 and with a keyhole aperture corresponding to the aperture 20. The insulating body 10 carrying the contact elements 17 is applied to one side of the plate 13 so that the keyhole apertures in the plate and body are aligned and the bosses 11 on the body enter and snugly fit the corresponding holes in the plate, as depicted in Figs. 1 and 3, thereby locating the insulating body 10 against rotation relatively to the plate 13.

The body 10 and plate 13 are secured together by a hollow rivet 23 which is inserted in their aligned keyhole apertures. As best seen in Figs. 3 and 4, the rivet shown is of generally tubular form split longitudinally to provide a slot 24 extending the full length of the rivet. The rivet 23 has a cylindrical portion 25 adapted to fit the cylindrical portion 21 of the keyhole apertures in the body 10 and plate 13. The portion 25 of the rivet is terminated by a base flange 26, and beyond the flange 26 the rivet 23 has a further tubular portion 27 which is slit longitudinally at several places to form flexible tongues 28 which are embraced by a spring collar 29 applied to the portion 27 of the rivet. The spring collar 29 is formed with a slot 30 which is aligned with the slot 24 when the collar is fitted to the rivet. One of the tongues 28 is extended to provide a terminal tag 31 by which an electrical connection may be made directly to the rivet 23. The tag 31 is bent outwardly as seen in Fig. 3, and traverses a recess 32 formed in the lower rim of the collar 29, thus locating the collar on the rivet with its slot 30 correctly aligned with slot 24. The tag 31 is shown as extending from a tongue 28 diametrically opposite the slot 24 of the rivet, the recess 32 in the collar being correspondingly disposed opposite the slot 30 of the collar. However, this is merely one preferred disposition.

The rivet 23 fitted with its spring collar 29 is inserted from the rear or underside of the insulating body 10 through the aligned keyhole apertures therein and in the plate 13 so as to bring the portion 25 of the rivet into the circular portion 21 of the keyhole aperture, the flange 26 on the rivet being brought up against an annular seating 33 recessed in the rear or lower face of the body 10. The cylindrical wall of the seating recess is made with a flat portion 34 (Fig. 2) which cooperates with a flat portion 35 of the periphery of the flange 26 to locate the rivet against turning and to align the slot 24 of the rivet with the eccentric slot 22 of the keyhole aperture. After insertion of the rivet, the rim of the portion 25 thereof is headed over against the face of the plate 13, to fix the body 10 rigidly to the plate.

With the assembly described, the plate 13 (which is customarily earthed) forms an electrostatic screen over the socket as a whole, and also screens adjacent contact elements from one another, owing to the retention of portions of the metal of the plate covering the portions of the face 12 of the body which lie around and between the bosses 11. The plate 13 thereby serves to reduce inter-contact capacity. The rivet 23 is earthed to the metal plate 13 through its riveting connection therewith, and therefore serves to augment the screening and reduction of capacity between the contact elements.

The keyhole aperture in the socket and plate assembly is provided to cooperate with a similarly shaped spigot key on a valve or other device to ensure that the latter is plugged into the socket in the correct orientation, as is common practice. For valves employing a metal envelope or shield used in the valve construction for electrostatically shielding the valve, and in which a metallic spigot key on the base of the valve is electrically connected with such envelope or shield for earthing the same, the rivet 23 serves to earth such metal envelope or shield by making conductive engagement with the spigot key when the latter is plugged into the socket. The portion 27 of the rivet in conjunction with the spring collar 29 form a spring clip device for resiliently gripping the portion of the spigot key which mates with the portion 21 of the keyhole apertures so as to ensure that the rivet makes a good mechanical and electrical connection with the spigot.

The specific embodiment which has been described above is given merely by way of example since many modifications may be made in the mechanical details. Accordingly, the herein contained description and illustration of a preferred embodiment are to be interpreted in an illustrative, and not in a limiting, sense.

I claim:

1. A valve holder or like socket comprising a one-piece body of insulating material having a series of pin-receiving contact elements disposed in apertures in the body, the latter being formed on one side with a series of bosses through which said apertures extend, said bosses being adapted to fit in a corresponding series of apertures in a metallic supporting plate to which said body carrying said contact elements is directly secured by a rivet inserted through a hole through said body and through an aligned aperture in said plate, whereby said bosses locate the socket against rotation relatively to said plate and provide insulation between the contact elements and the adjacent surrounding metal of said plate, and said plate forms an electrostatic screen, over the socket as a whole and extending between adjacent contact elements, and said rivet is in conductive connection with said plate and thereby augments such electrostatic screen.

2. A socket installation comprising, in combination, a metallic supporting plate having a series of contact apertures in an annular array around a guide aperture, a one-piece body of insulating material applied to one side of said plate and having a series of contact apertures and a guide aperture registering respectively with said contact apertures and said guide aperture in said plate, a series of pin-receiving contact elements mounted within said contact apertures in said body and having pin-receiving portions disposed to receive co-operating contact pins inserted through said contact apertures in said plate, said body having on the side thereof adjacent said plate a series of bosses through which said contact apertures in said body extend and which project into said contact apertures in said plate to locate said body against rotation relatively to said plate, whereby said bosses provide insulation between said contact elements and the adjacent

surrounding metal of said plate and said plate forms an electrostatic screen extending over the entire adjacent side of said body and between adjacent contact elements, a hollow metal guide member in said registering guide apertures for guidably receiving a spigot inserted in said member through said guide aperture in said plate, said guide member comprising a rivet portion securing said body directly to said plate, whereby said guide member is in direct electrical engagement with said plate and forms a continuation extending longitudinally between said contact elements of the electrostatic screen formed by said plate and a resilient portion at the end of said rivet portion remote from said plate forming a spring clip adapted for resiliently and electrically engaging such spigot.

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

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