

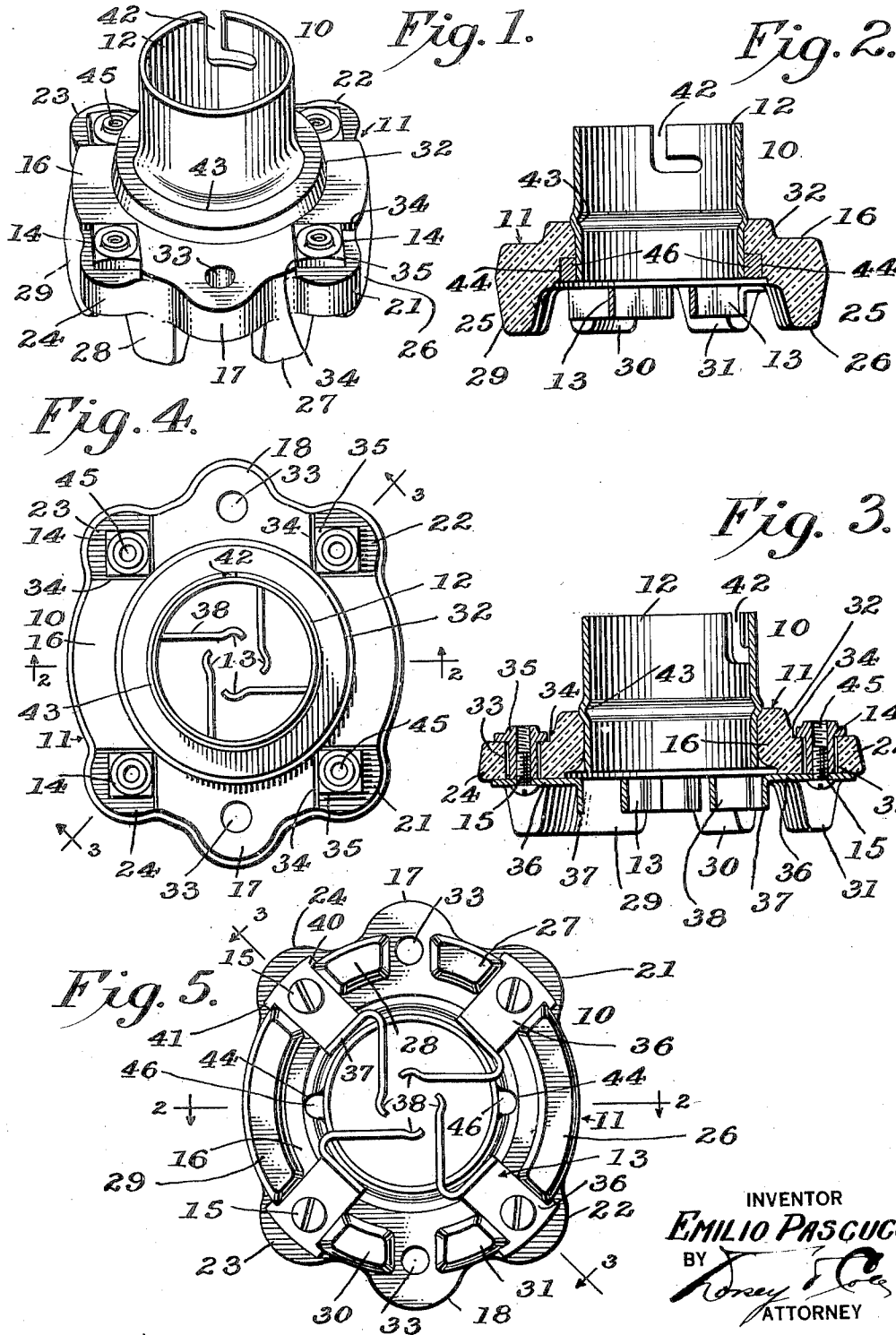
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SOCKET

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UNITED STATES PATENT OFFICE.

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SOCKET.

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This invention relates to the art of electrical sockets, and more particularly to vacuum tube sockets.

It is an object of this invention to provide an improved vacuum tube socket which is particularly adapted for radio uses.

It is also an object of this invention to provide a socket which has permanent high insulating qualities and is unaffected by heat, light and moisture, and is therefore adapted to cut down power losses, prevent short circuits, and eliminate radio frequency leakage and the so-called tube noises.

It is a further object of this invention to incorporate in said socket new and improved electrical connections.

With the above and other objects in view, which will be apparent as the description proceeds, I have disclosed my invention in the following specification, taken in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of my improved socket;

Fig. 2 is a vertical section on the line 2—2 of Figs. 4 and 5;

Fig. 3 is a vertical section on the line 3—3 of Figs. 4 and 5;

Fig. 4 is a top plan view; and

Fig. 5 is a bottom plan view.

Owing to the high frequencies used in radio communication, it is essential, if the best operation of radio apparatus is to be secured, that the insulators which are utilized be as nearly perfect insulators as possible, and that they be free from surface condensation, strong, and unaffected by heat, light and moisture. It is well known that many of the so-called insulating materials now on the market, such as porcelain, ordinary glasses, fibre, rubber and its derivative products, and phenolic condensation products, do not possess these qualities.

By careful investigation, however, it has been demonstrated that low expansion barosilicate glass, of the type disclosed in United States Letters Patent Number 1,304,623, granted May 27, 1919, to E. C. Sullivan and W. C. Taylor, forms an ideal insulating material for radio purposes.

The use of glasses of this type for radio purposes is not, however, claimed specifically in this application, inasmuch as this is the subject of a co-pending application, by Albert

E. Marshall, Ser. No. 726,507, filed July 17, 1924 now Patent No. 1,700,066.

The insulator disclosed in the present application is preferably made of this type of glass owing to its peculiar adaptability for this purpose. Inasmuch, however, as this glass has a hardness of about 800° C., as determined by the method set forth in said patent, it is difficult to work it into articles involving complicated shapes, and the invention of the present application is the result of an extended investigation in order to develop a construction which can be so manufactured and which, at the same time, is capable of receiving and securely holding the necessary metal fittings.

In the accompanying drawings, 10 designates my improved socket as a whole. This consists of the insulator 11, which is preferably of the glass referred to above, a tubular member 12 to receive a vacuum tube, and a plurality of electrical contacts 13, bushings 14, and screws 15. Parts 12, 13, 14 and 15 are preferably made of brass, although copper or other suitable materials can be utilized therefor.

As indicated herein, the insulator 11 consists of a body portion 16, provided with a plurality of laterally extending projections 17, 18, 21, 22, 23 and 24, a downwardly extending flange 25, which is interrupted in order to form a series of separate and downwardly tapering flanges 26, 27, 28, 29, 30 and 31, and an upwardly extending flange 32. Each of the projecting portions 17, 18, 21, 22, 23 and 24 is provided with a recess 33, the recesses in projections 17 and 18 being adapted to provide means for the convenient attachment of the socket to the panel or base (not shown), and the recesses in projections 21, 22, 23 and 24 being adapted to receive bushings 14. As indicated in Figs. 1 and 4, the upper surface of each of the projections 21, 22, 23 and 24 is provided with a countersunk V-shaped recess 34.

As best shown in Fig. 3, the bushings are of a circular cross-section which is smaller than the cross-sectional area of the surrounding recesses 33, and, as indicated in Figs. 1, 3 and 4, each of the bushings 14 is provided with an integral square head 35, the latter cooperating with the V-shaped recesses 34 to form a simple and effective means of prevent-

ing the turning of bushings 14. The latter are preferably made a trifle longer than the thickness of the glass through which they pass to avoid the necessity of causing an undue compression on the glass in order to secure the contacts 13 to the bushings.

As best shown in Figs. 3 and 5, each contact 13 consists of a single piece of spring metal, which has a flat portion 36, adapted to lie adjacent to the underside of the body portion 16 of the insulator, and a flange 37 lying in a plane at right angles therewith. This flange forms one arm of a V, whose other arm 38 is integral and lies at substantially a 45° angle therewith, in order to be tangentially disposed to and advantageously cooperate with the terminals of a vacuum tube (not shown) and form a wiping contact therewith. The extreme free end of each contact is preferably made slightly concave at the point where it is desired to retain the vacuum tube terminal. The flat portion of each contact is preferably made of the same dimensions as the spaces between flanges 26 and 27, 28 and 29, 29 and 30, and 31 and 26, at the points where they join the body portion 16. As shown in Fig. 5, the outer end of each flat portion 36 is preferably formed with projecting ears 40 and 41 which are adapted to bear against the outer portions of flanges 26, 27, 28, 29, 30, and 31, and, in conjunction with the body portion 16 and the flat portions 36 of contacts 13, prevent any lateral movement of the contacts with respect to the socket.

The tubular member 12, which is provided with the usual bayonet joint 42, may be secured in the insulator in various ways, and I have herein shown it provided with a circumferential projection 43 which is adapted to cooperate with a slight recess formed in the flange 32, of the insulator, thus limiting its descent therein. The body portion 16 of the insulator is provided with a plurality of recesses 44, preferably two, spaced 180° apart as indicated in Figs. 2 and 5, and a drop of solder 46 is placed in each of these recesses after the tubular member has been inserted in the insulator. This solder adheres to the member 12 and limits its move-

ment with respect to the insulator in one direction, the projection 43 limiting its movement in the opposite direction.

From the foregoing description it will be evident that, when assembled, the member 12 is rigidly positioned within the insulator, and the contacts 13 are firmly secured to the bushings 14 by the screws 15, which engage internal threads 45 (Fig. 3) with which the bushings are provided, any twisting movement being prevented by the engagement of the sides and projecting ears of the contacts with the interrupted flanges 26, 27, 28, 29, 30, and 31.

The latter serve the additional purpose of maintaining all of the contacts, except projecting portions (not shown) which may be provided for the attachment of the lead wires, wholly within the outline of the insulator. As indicated herein, the upper end of each threaded bushing 14 forms a convenient point of attachment for a lead wire, without the necessity of having any portion of the contact extend beyond the outline of the insulator.

The body portion 16 of the insulator is preferably so shaped as to facilitate the spacing of the contacts 13 from the member 12.

Although I have illustrated a specific embodiment of my invention herein, it will be apparent that it is susceptible of various modifications within the scope of the following claim; an example of such a modification being to make the tubular member 12 of glass, either integral with or separate from the body of the insulator.

I claim:

In a vacuum tube socket, the combination of an insulator provided with a plurality of depending peripheral flanges and electrical contacts, each of the latter comprising a contact portion, a body portion adapted to fit snugly between the depending peripheral flanges of the insulator, and a pair of ears projecting from the body portion for cooperation with the flanges on the socket to prevent lateral movement of the contact with reference to the insulator.

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