

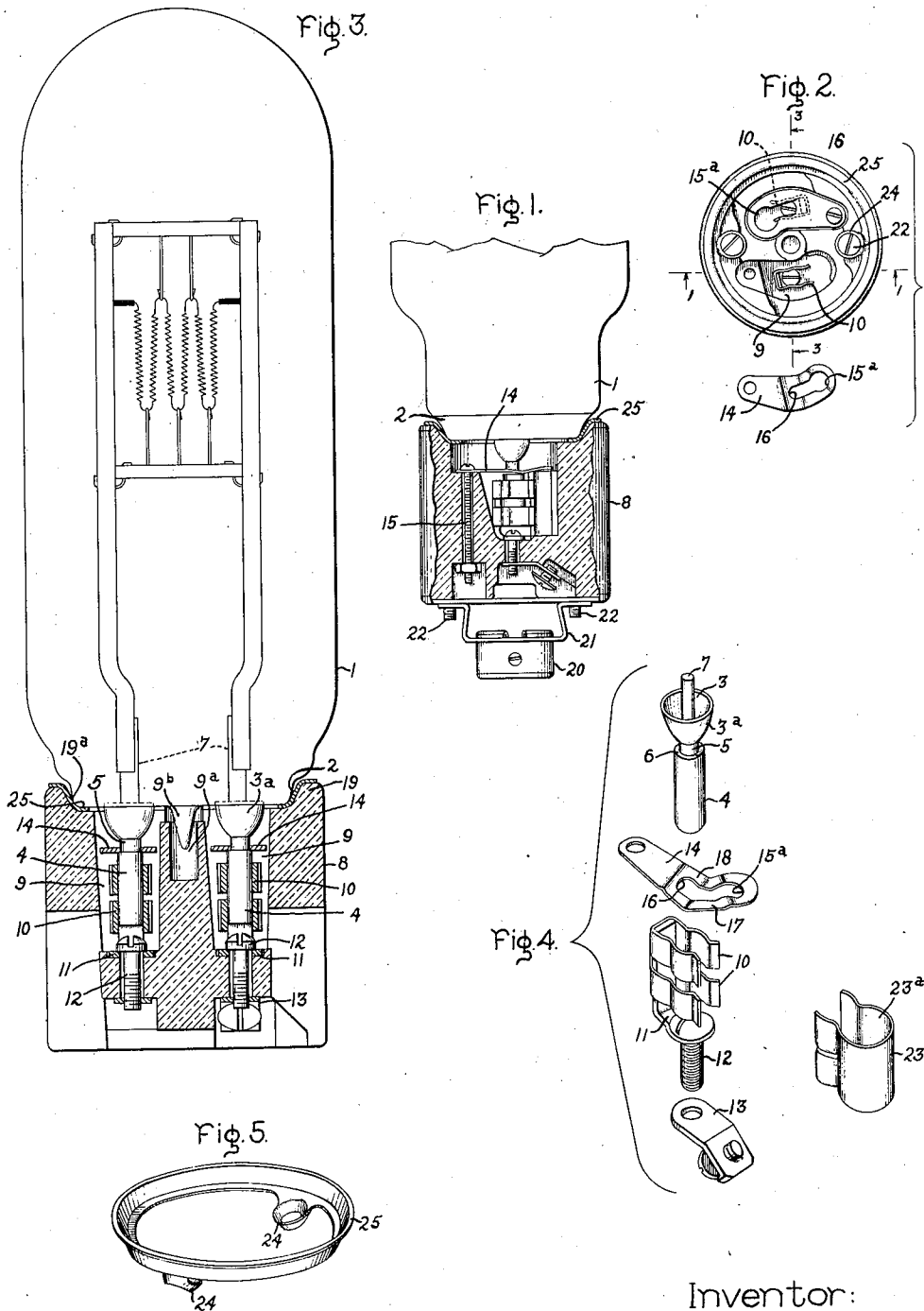
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SOCKET STRUCTURE

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SOCKET STRUCTURE

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3 Claims. (Cl. 173—328)

This invention relates to mountings for electric translation devices such as lamps, or the like, or the type in which the cooperating plug of the device is held securely in a socket against accidental displacement.

The present invention comprises an improvement over the socket structure disclosed in the co-pending application of Daniel K. Wright and Frederick H. Weston, Serial No. 143,310, filed May 18, 1937.

The object of the invention is to provide an improved construction and arrangement in a mounting of this type, and more particularly to provide a bearing surface for the plug of the device as it is rotated for mounting in the socket.

In the accompanying drawing Fig. 1 is a side elevation in section of a socket embodying the invention taken along lines 1—1 of Fig. 2; Fig. 2 is an exploded top plan view of the socket with one of the locking plates removed; Fig. 3 is a sectional view taken along the line 3—3 of Fig. 2, and showing a lamp mounted in the socket; Fig. 4 is an exploded view showing the elements of the socket, and Fig. 5 is a perspective view of the bearing ring upon which the plug of the lamp rests.

Referring to the drawing, there is illustrated a socket for use with an electric lamp having a glass envelope 1 provided with a plug connector which comprises a base 2 from which extend two prong terminals 3 rigidly fixed to the base by means of skirts 3a sealed thereto. Each of the prongs has a cylindrical contact-engaging portion 4 and a reduced portion 5 forming a shoulder 6 above the contact-engaging portion. The upper ends of the prongs are connected to rigid filament supporting rods 7 which serve as lead-in wires. The rods 7 locate the filament of the lamp precisely with respect to the base. This type of plug connector is used for lamps drawing extremely heavy currents so that it is important that the prongs be held in firm engagement with the contacts of the socket.

The socket comprises a base 8 of porcelain, or other suitable insulating material, in the upper side of which are formed two pockets 9 and a central depression 9a, the latter being provided to receive the seal 9b of the lamp. In the pockets 9 are spring clips 10, the open ends of which face in opposite directions, as shown by Fig. 2. The contacts may be reinforced by spring clips 23 which are snapped over the arms of the contacts. The spring clips 23 prevent decrease in contact pressure applied by the spring

contacts 10 to the lamp prongs due to heating of the contact arms. The contacts are spot welded to supports 11 which are secured to the base by screws 12 threaded into terminal plates 13, to which the line conductors are attached.

Above each of the pockets 9 is a resilient metal locking plate 14 which is secured to the base by means of a bolt 15. The locking plates are provided with openings 15a through which the contact-engaging portions 4 of the prongs may be inserted and communicate with arcuate slots 16 into which the reduced portions of the prongs enter when the plug is rotated relative to the socket in a clockwise direction as viewed in Fig. 2. The openings 15a are in axial alignment with the enlarged portions 23a of the spring clips 23, but are smaller in size. The edges of the slots 16 engage the shoulders 6 of the prongs and prevent axial displacement of the prongs. As shown in Fig. 4 the locking plates are formed so that they are highest at their free ends adjacent the openings 15a. From the openings 15a the edges of the slots 16 have downwardly inclined portions 17 which engage the shoulder 6 on the prongs when the plug is rotated in a clockwise direction after insertion in the socket and guide the reduced portions of the prongs into the narrow slots 16 and, at the same time, urge the prongs toward the bottom edge of the socket. This resiliently forces the lower edge of the plug against the shoulder portion 19 on the base 8 and prevents any wobbling of the plug in the socket. The plug has a conical seating shoulder 19a which fits in the complementary seating shoulder formed in the base 8 and the shoulder cooperates to center the plug in the socket, so that the filament of the lamp is held in fixed relation to the socket. At the end of the downwardly inclined portions 17 the locking plates have upwardly inclined portions 18 which engage the shoulder 6 and resist counterclockwise rotation of the plug relative to the socket which would tend to move the prongs of the plug out of engagement with the contacts. From one aspect the inclined portions 17 and 18 provide a projection which locks the plug in the socket. The socket is mounted by a coupling 20 provided with arms 21 which are secured to the base by screws 22.

The structure thus far described is the same as that disclosed in the above mentioned co-pending application of Daniel K. Wright and Frederick H. Weston.

It has been found in mounting the lamp in the socket just described that considerable turn-

ing force was necessary to overcome the frictional resistance between the base shoulder 19a and the socket shoulder 19, in addition to that necessary to secure the prongs in the locking plates and contact clips. While the socket described provides an excellent mechanical and electrical supporting means for the lamp and while a snug and tight-fitting inter-engagement between the lamp base and the socket is essential, it is desirable to eliminate any unnecessary frictional resistance arising between the shoulders 19 and 19a whenever the lamp is mounted in the socket.

To this end an anti-friction metal ring or bearing member 25 is placed upon the base shoulder 19 where it conforms to the contour of the shoulder. The ring is provided with ears 24 which are engaged by the screws 22 to clamp the ring to the base. In this manner the anti-friction bearing surface is disposed between the lamp base shoulder 19a and the base shoulder 19 and greatly reduces the frictional force arising between the shoulders as the lamp is being inserted into or removed from the socket, particularly in the construction wherein the socket base is made of porcelain. This prevents the edges of the base shoulder 19 from becoming chipped or broken due to the frictional forces arising from insertion of the lamp. In addition to protecting the base shoulder 19 the bearing ring provides a smooth surface upon which the lamp base 2 may rotate as the lamp is applied to the socket.

In the use of the socket the prongs 3 of the plug are inserted through the openings 15a in the locking plates 14. In this position the prongs are out of contact with the contacts 10 of the socket. In order to bring the prongs into engagement with the contacts, the plug is rotated in a clockwise direction as viewed in Fig. 2 which causes the shoulders 6 on the prongs to engage the inclined portion 17 of the locking plates causing the lower edge of the plug to be pulled downwardly into the bearing member 25 of the base. Just prior to the complete engagement of the prongs with the contact 10 the shoulders 6 of the prongs reach the upwardly inclined portions 18 of the locking plates. Since at this time a considerable twisting force is being exerted on the plug, the prongs of the plug are moved quickly into complete engagement with the contacts 10 due to the decreased resistance offered by the upwardly inclined portions 18. When the plug is to be removed from the socket, it is first turned in a counterclockwise direction until the prongs enter the openings 15a. The inclined portions 18 of the locking plates resist the initial part of this movement, but as soon as the shoulder 6 reaches the inclined portions 17 the prongs are quickly

moved out of engagement with the contacts 10.

What I claim as new and desire to obtain by Letters Patent of the United States is:

1. A device for use with an electric translation-device base of ceramic material having an annular seating shoulder and contact terminal studs projecting from said base in the direction of the axis of said shoulder and themselves provided with securing shoulders; said device comprising a socket for said base having a seating shoulder of ceramic material, a metallic anti-friction bearing member mounted on said seating shoulder; resiliently yielding engagement means in said socket for coacting with said stud shoulders to hold the base shoulder against said bearing member engageable with the said stud shoulders by relative turning of base and socket for engagement of said base shoulder and bearing member, said engagement means having bottom projections in position for the stud shoulders to ride under them as base and socket are turned relative to one another; and contact means in the socket engageable with said studs by the relative turning of the base and socket.

2. A socket for an electric translation device, said socket having an annular seating shoulder of ceramic material for coacting with a corresponding annular base shoulder of the device, said base shoulder being of ceramic material, a metallic anti-friction bearing member secured to said seating shoulder, resiliently yielding engagement means with keyhole slots for receiving through their enlarged portions shoulder contact terminal studs projecting from said base in the direction of the axis of the said base shoulder, and engaging the stud shoulders when the base and socket are turned relative to one another for insertion of the studs in the slots as aforesaid, said engagement means having bottom projections in position with the stud shoulders to ride under them as the studs reach the limit of movement in the slots, and contact means in position to engage said studs as their shoulders pass under said projections.

3. A socket comprising a body portion having an annular shoulder of ceramic material, a metallic bearing member mounted on said shoulder, a plurality of resilient members having keyhole slots therein adapted to engage with prongs on a base and pull a shoulder of ceramic material on said base firmly against the bearing member upon rotation of the base relative to the socket and a plurality of contact clips located in alignment with said keyhole slots and adapted to engage said prongs upon the relative rotation of base and socket.

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