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A. W. FRANKLIN
CATHODE RAY TUBE SOCKET

2,359,634

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Fig. 1.

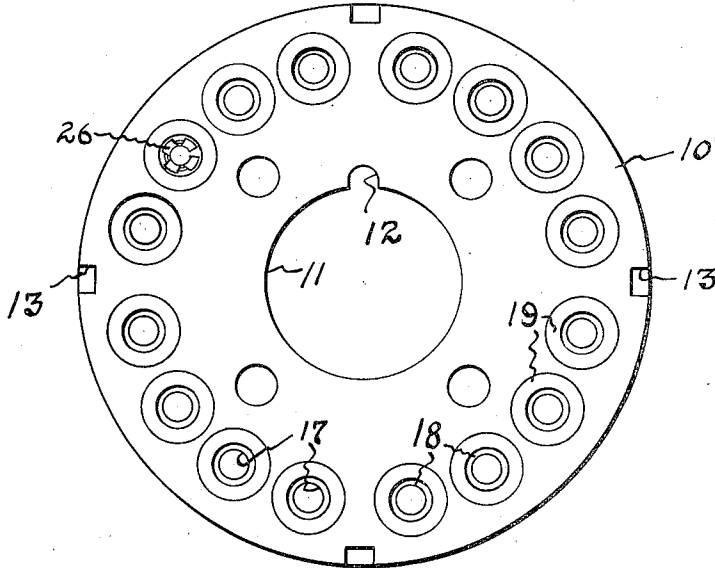


Fig. 2.

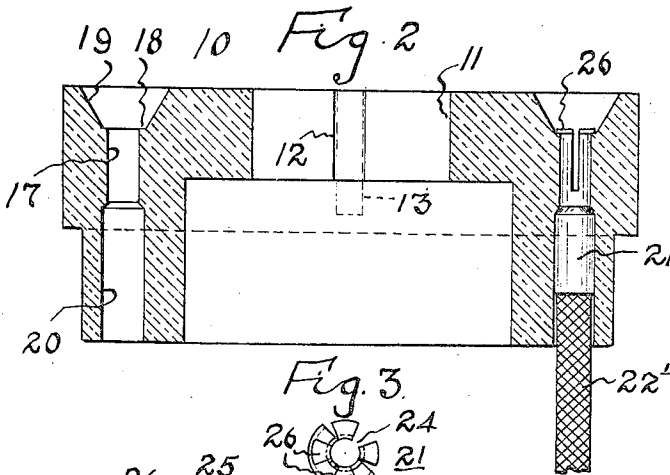


Fig. 3.

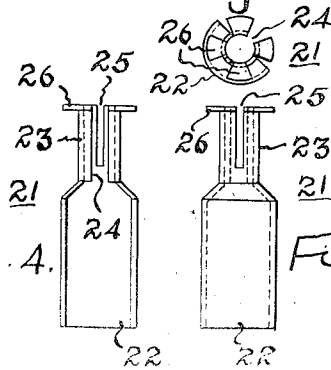
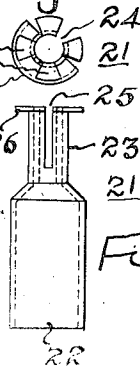


Fig. 4.



Fig. 5.



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CATHODE RAY TUBE SOCKET

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Application April 14, 1943, Serial No. 482,973

1 Claim. (Cl. 173—328)

This invention relates to mounting and connection sockets for any electrical apparatus having mounting and terminal pins as, for example, a cathode ray tube and similar vacuum electric devices.

The main object of this invention is to provide a strong, rugged, simple, inexpensive socket of this type employing pin receiving contact terminals which may be easily mounted on the socket support and removed therefrom for repair or replacement when required.

Further objects of this invention are to provide socket devices of this type having a high voltage flashover versus altitude rating; high resistance between adjacent pins and a flat curve of insulation resistance versus humidity and temperature; complete enclosure of the contacts; and contacts of such design as to allow a maximum number of insertions and withdrawals without permanent distortion thereof.

Other and more detailed objects will be apparent from the following description of an embodiment of the subject matter of this invention.

This invention resides substantially in the combination, construction, arrangement and relative location of parts as will be described in detail below.

In the accompanying drawing,

Figure 1 is a plan view of a cathode ray tube socket embodying the subject matter of this invention;

Figure 2 is a vertical central cross-sectional view through the socket;

Figure 3 is a top plan view of one of the contact pin receiving terminals;

Figure 4 is an elevational view of the terminal from one side; and

Figure 5 is a similar view of the terminal from the other side.

The socket illustrated in the drawing includes a base or support 10 of any suitable insulating material such as ceramic, a plastic, hard rubber or the like having a central opening 11 with a communicating axial notch 12 to receive the locating and centering pin forming part of the base of the cathode ray tube as frequently employed with such devices, by means of which the multitude of terminal pins on the base of the device are properly located with respect to the contacts. Around the periphery of the support 10 are vertical notches 13 by means of which, as is well known in the art, the socket may be mounted on any support as, for example, a chassis by means of a clamping ring having fingers which engage the base by these slots.

Disposed in circular relationship about the center of the support 10 is a series of contact receiving apertures of various cross-sectional diameters and shapes, as clearly indicated in Figure

2. Proceeding upwardly from the bottom of the support is a cylindrical bore 20 connecting with a cylindrical bore 17 of smaller diameter which in turn opens into a conical recess 19. The recess 19 is of the form of a truncated cone and the diameter of the passage 17 is less than the diameter of the interconnecting conical portion to form a slight annular shoulder 18, as illustrated in the drawing.

The contacts 21 serve the purpose of providing a point of connection of circuit wires such as that indicated at 22' and forming a socket for receiving a terminal pin of the electrical device, such as the cathode ray tube, to be mounted on the socket.

An important feature of this invention is present in the construction of the contact 21. As illustrated, in Figures 3, 4 and 5, it consists of a substantially semicircular portion 22 converging into a cylindrical portion 23 interrupted by means of a slot 24 extending throughout its length. Diametrically opposite the slot 24 is a smaller slot 25 extending for only a part of the length of the cylindrical portion 23. The upper end of the portion 23 terminates in four separate ears 26 extending at right angles to the axis of the contact.

The contacts are proportioned so that they may be forced into the socket 10 after attachment of the conductors 22 by being pushed in from the rear face of the socket. As the ears 26 move into the restricted passage 17 they are compressed by reason of the transverse resiliency of the cylindrical portion 23 of the contact so that they may pass into the conical recess 13 and then snap back so as to engage the ledge 18. If desired the cylindrical portion 23 may be then expanded by inserting a suitably tapered tool into the open end to further lock it in place. As clearly illustrated in Figure 2, the contact has a shape complementary to the portion of the passage through the base in which it lies. As is clear from Figures 1 and 3, each contact provides a cylindrical passage into which a cylindrical terminal pin of the electrical device may be inserted.

The parts are proportioned with special reference to the ledge 18 and the ears 26 so that, when necessary, contact can be withdrawn by pulling on the associated wire which, of course, is attached thereto by soldering in accordance

with the usual practice. The ears 26 offer sufficient resistance by reason of engagement with the ledge 18 so that the terminal pins of the electrical device may be inserted in the contacts. As soon as the pins begin to enter the contacts, they, of course, expand them so that the ears 26 cannot come out of engagement with the ledge 18 so that there is no danger of the contact being forced out of the socket upon mounting of the electrical device. Usually the contact pins of such electrical devices are slightly rounded on the ends so that they may enter the contacts with relative ease. On the other hand, the contacts can be withdrawn by pulling sufficiently hard on the connected wires.

From the above description, it will be seen that the subject matter of this invention is simple and inexpensive to manufacture and yet is so devised as to be rugged and permanent in use while being readily replaceable for purposes of maintenance and repair. In addition, it will be seen that the flashover distance between contacts is relatively long and that contacts are completely enclosed within the socket base. It will be apparent that the construction of the contacts is such that they may withstand many insertions and withdrawals of contact pins without destructive distortion by reason of the confinement thereof within the passages of the base. Another important feature of the invention is that the base of the socket is of a single piece

as distinguished from the more common practice at present of making these bases of several pieces between the parts of which moisture may accumulate causing them to have a low resistance under conditions of high humidity and permitting them to flashover and otherwise be a source of breakdown.

From the above description, it will be apparent to those skilled in the art that the subject matter of this invention may be embodied in modified form without departure therefrom. I do not desire, therefore, to be limited to the embodiment employed for purposes of illustration but rather to the scope of the claim granted me.

15 What is claimed is:

20 An electrical receptacle of the type described comprising a single piece base of insulating material having at least one aperture therethrough, said aperture having portions of different diameters joined by a tapered portion, and a similarly shaped contact lying wholly within said base and having radial ears overlying the end of the portion of the aperture of smaller diameter to hold the contact in the aperture, said contact 25 being longitudinally slotted at its eared end so as to be movable endwise into said aperture through its larger end, the tapered portion of the aperture camming the ears inwardly so as to seat them in place and lock the contact in 30 the aperture.

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