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2,635,129

TUBE-EJECTOR DEVICE

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FIG. 1

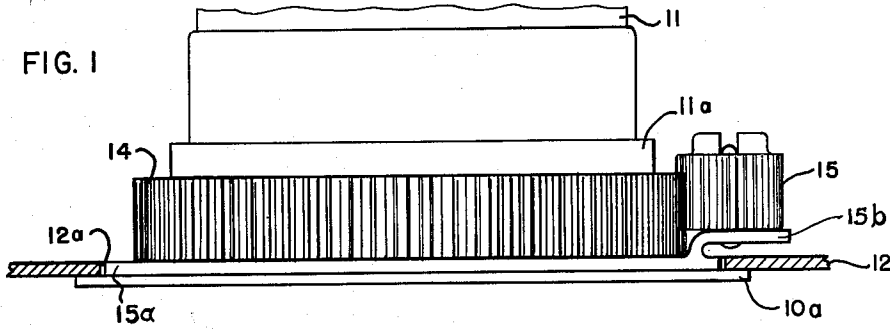


FIG. 2

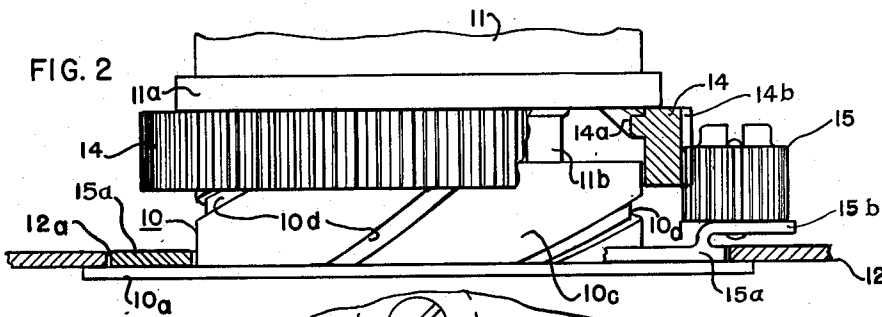
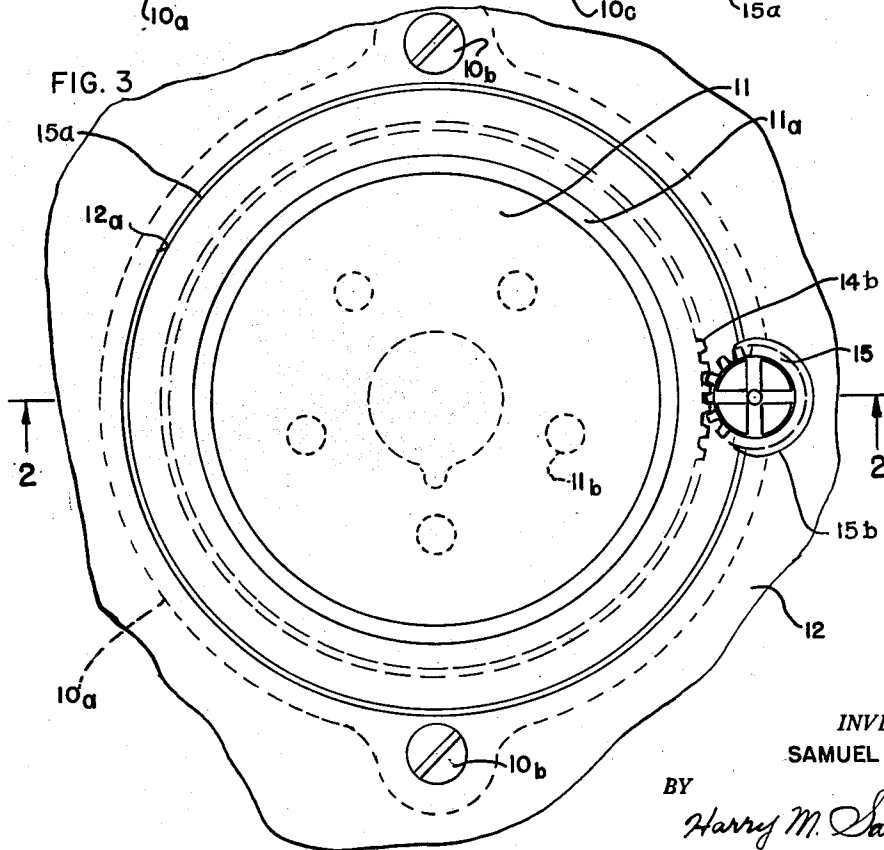


FIG. 3



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TUBE-EJECTOR DEVICE

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Application August 1, 1950, Serial No. 177,113

3 Claims. (Cl. 173—328)

(Granted under Title 35, U. S. Code (1952),
sec. 266)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment of any royalty thereon.

This invention relates to improvements in tube sockets, and more particularly to means in the form of a tube-ejector device associated with a conventional tube and socket and operable to force an initial movement of the tube axially away from the socket whereby the terminal prongs of the tube are at least partially released from the grip of the socket.

An example of a tube ejector to which this invention relates is shown in British Patent No. 445,486 issued April 14, 1936, to Reginald J. Miller. Reference is also made to the design for a tube-ejector device, as disclosed in my copending application Serial Number 194,003, filed November 3, 1950.

One of the objects of this invention is the provision of a tube socket of the character referred to which has advantages over those proposed heretofore in the way of greater simplicity of construction and manner of operation, and lower cost of manufacture.

Another object of my invention is the provision of a tube-ejector device which can be readily combined to work with any conventional socket and the corresponding conventional tube.

Other objects and advantages will hereinafter appear.

For the purpose of illustrating this invention, an embodiment thereof is shown in the drawings, wherein

Fig. 1 is a front elevational view, partly in section, of a conventional tube and socket with which there is associated a tube-ejector device constructed and operating in accordance with the invention;

Fig. 2 is a view similar to Fig. 1 and illustrative of the manner of operation of the improved tube-ejector device, the section being taken on the line 2—2 in Fig. 3; and

Fig. 3 is a plan view, partly broken away, of Fig. 1.

In the drawing, the reference numeral 10 designates a conventional tube socket of the so-called above-chassis type, and into which is plugged the tube 11. Socket 10 consists of a base-plate 10a secured to the chassis 12 by studs 10b, and of a cylindrical part 10c extending upwardly through the usual circular open 12a in the chassis.

In the embodiment of the invention disclosed in the drawing, the improved tube-ejector device is shown as being in the form of a ring 14 disposed about the cylindrical part 10c of the socket, and

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rotatable with respect to the latter about the longitudinal axis thereof. The ring 14 is threaded on the part 10c by steeply-pitched threads designated, respectively, by the reference numerals 10d and 14a.

For the purpose of imparting rotary movement to ring 14 about the vertical or longitudinal axis of socket 10, it is provided on its outer, cylindrical surface with teeth 14b. A pinion 15 is supported in mesh with ring 14, as shown. Upon rotation of pinion 15 clockwise, as viewed in Fig. 3, ring 14 rotates counter-clockwise, and by reason of the screw-jack principle or cam-like action provided by threads 10d and 14a, the ring forces itself upward, as shown in Fig. 2, to release the terminal prongs 11b of the tube from the grip of the socket. For this purpose, the disposition and dimensions of ring 14 are such that it is flush-mounted with the socket 10, as shown, and engages the under surface of part of the tube structure above the socket. This part is the Bakelite base 11a in the conventional type of tube shown to illustrate my invention. In the trade, this type base is designated as "octal" and is common to many tubes including the 6SQ7GT.

A plate 15a which fits about the cylindrical part 10c of the socket and is disposed within the opening 12a, flush with the chassis, is secured in place against the base-plate 10a by the studs 10b, as shown. A horizontally disposed lug 15b which may be integral with plate 15a, provides the means for mounting pinion 15 and supporting the same in mesh with ring 14.

The pinion 15 may be provided with an extension to facilitate rotation thereof by hand, or it may be slotted or otherwise shaped to receive a screwdriver or other suitable tool.

With the pitch of threads 10d and 14a made relatively steep, as shown in Figs. 1 and 2, a few turns of pinion 15 are sufficient to raise ring 14 to the position shown in Fig. 2, at which position the tube 11 is released sufficiently from the grip of the socket so that it can then be lifted out easily.

While but one embodiment of this invention has been disclosed, it will be understood by those skilled in the art that various modifications, such as in the size, shape and arrangement of the parts, are possible without departing from the spirit of the invention or the scope of the claims.

What is claimed is:

1. In combination with a tube socket, a device for ejecting an electron tube from said socket comprising a first ring with helical grooves on the outer surface thereof concentric with and fixed to said socket, a second ring concentric about said

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first ring, said second ring having helical threads on the inner surface thereof engaged with said helical grooves, and teeth about the outer surface thereof, said second ring including means for engaging a portion of said electron tube, a pinion in mesh with said second ring, and means supporting said pinion to allow rotation thereof and to maintain said pinion in mesh with said ring, said last-named means being fixed with respect to said socket.

2. The combination set forth in claim 1, in which said means for engaging a portion of said electron tube comprises the end of said ring which abuts said tube when the latter is seated in said socket.

3. In combination with a tube socket, a device for ejecting an electron tube from said socket comprising a first ring concentric with and fixed to said socket, a second ring concentric about said first ring and rotatable with respect thereto, said first and second rings having complementary and engaging threads to permit movement of said second ring axially of said first ring, said second

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ring including means for engaging a portion of said electron tube, said second ring having teeth about the outer surface thereof, a pinion in mesh with said second ring, and means supporting said pinion to allow rotation thereof and to maintain said pinion in mesh with said ring, said last-named means being fixed with respect to said socket.

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