April 25, 1950 M. M. LEVY 2,504,992

HOLDER FOR THERMIONIC VALVES

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FIG. 1.

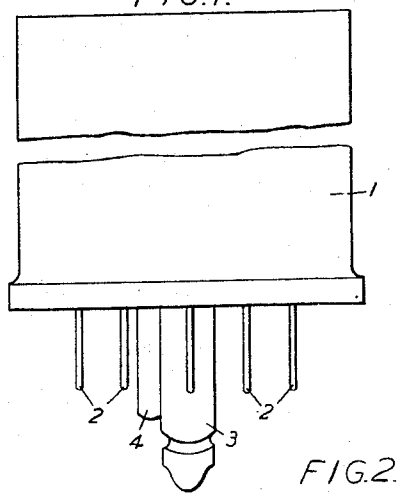


FIG. 2.

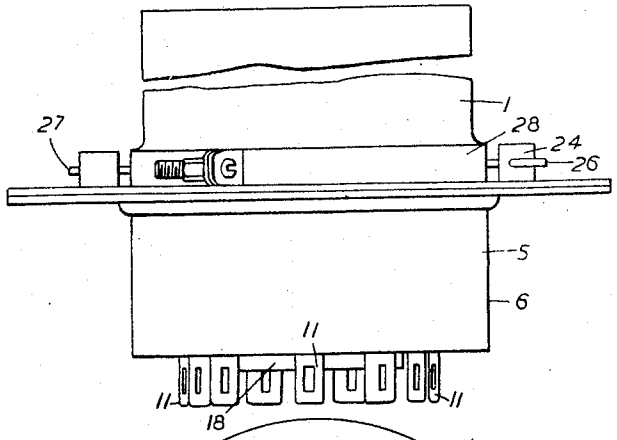
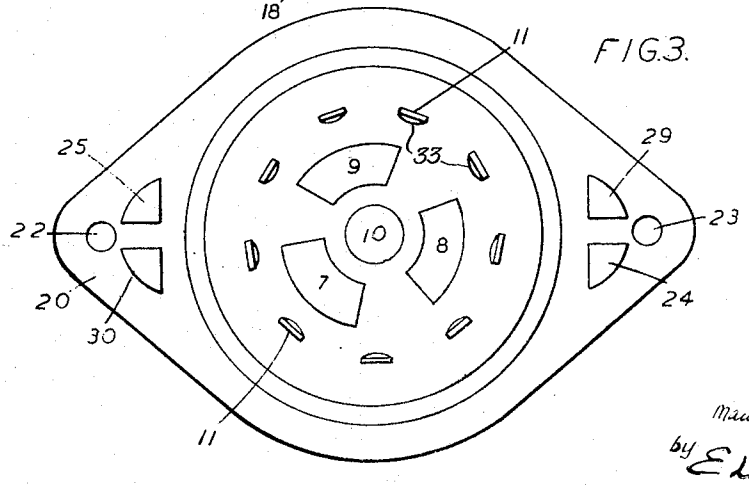


FIG. 3.



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FIG. 4.

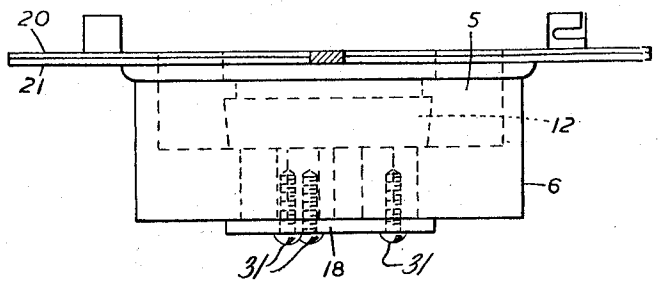


FIG. 7.

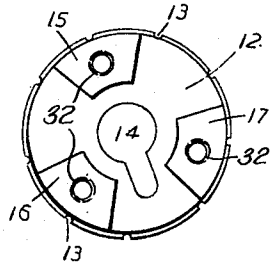


FIG. 5.

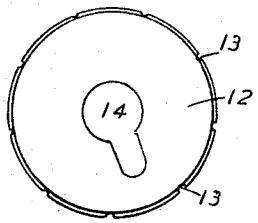


FIG. 6.

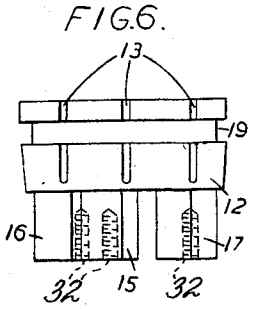


FIG. 9.

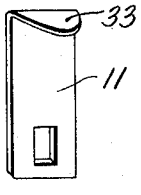


FIG. 8.

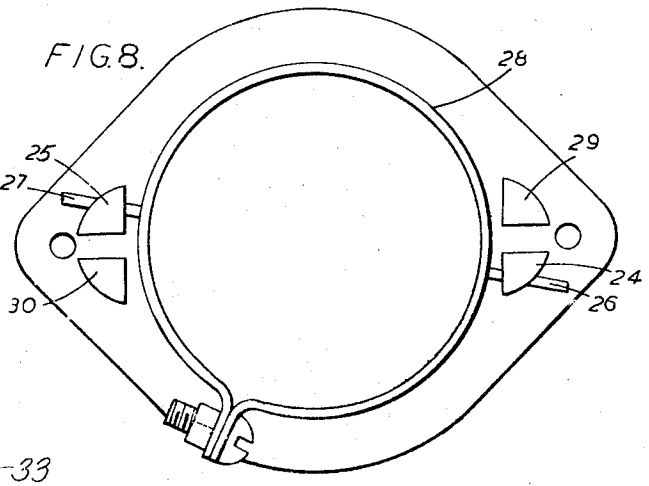
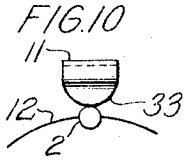


FIG. 10.



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UNITED STATES PATENT OFFICE

2,504,992

HOLDER FOR THERMIONIC VALVES

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Application July 5, 1946, Serial No. 681,499
In Great Britain July 4, 1945

Section 1, Public Law 690, August 8, 1946
Patent expires July 4, 1965

1 Claim. (Cl. 173—328)

(Granted under the provisions of sec. 14, act of March 2, 1927; 357 O. G. 5)

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The present invention relates to holders for thermionic valves, and particularly to holders for valves having a number of pin terminals sealed through a substantially flat or dish type base.

My U. S. Patent 2,343,779 issued on March 7, 1944, describes and claims a holder for an "acorn" type valve in which the pin terminals radiate outwards from the axis of the valve in a plane perpendicular to that axis. The chief feature of that holder comprises a rotatable portion of the holder with a set of grooves for the pin terminals, the arrangement being such that the valve is placed with the pins in the grooves, and is then rotated together with the rotatable member about the valve axis so as to bring the pin terminals into engagement with the corresponding contact springs held in a fixed portion of the holder.

The principal object of the present invention is to apply the same principle in the design of a socket for a valve in which the pin terminals project from the base in a direction parallel to the axis of the valve.

With valves of this kind, the pin terminals are frequently arranged in a circle about a central key member, and the corresponding holder has hitherto comprised a number of corresponding sockets into which the pins are directly inserted. It has been found that such holders are often unsatisfactory; bad contacts develop, and considerable force is often necessary to get the valve into and out of the holder. This often results in damage to the pins and fracture of the seals through which the pins pass into the valve.

Accordingly, the present invention provides a holder or socket for a thermionic valve of the kind having electrode terminals which project from the base parallel to the axis of the valve, characterised in this, that the holder is provided with a set of contact devices having the same relative positions as the electrode terminals, and is also provided with a rotatable member having grooves also in the same relative positions as the electrode terminals, the arrangement being such that the valve when placed with its electrode terminals in the said grooves is adapted to be rotated about its axis, carrying the rotatable member therewith, in such manner as to bring the said electrode terminals into electrical contact with the said contact devices.

The invention will be described with reference to the accompanying drawings in which:

Fig. 1 shows a side-view of a valve for which the holder according to the invention is intended;

Fig. 2 shows a general view of the valve when inserted in the holder;

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Fig. 3 shows a view looking into the cup-shaped moulding of the holder;

Fig. 4 shows a side view of the holder;

Figs. 5, 6 and 7 show respectively a top view, side view and underside view of the rotating member; and

Fig. 8 shows a top view of the valve in the holder;

Fig. 9 shows a detail view of a contact spring;

Fig. 10 shows a contact spring in contact with an electrode terminal.

Referring to Fig. 1, the valve for which the holder of the present invention is intended comprises an envelope 1 of metal or glass, shown generally cylindrical, without any detail. From the underside of the base project a number of pin terminals 2 arranged in a circle around a central metal plug 3 having a key 4. The pin terminals 2 are parallel to the axis of the envelope 1.

Fig. 2 shows the appearance of the valve when it has been inserted in the holder according to the invention.

The holder 5 comprises a cup-shaped moulding 6 of insulating material. Fig. 3 shows a view looking inside the cup, and Fig. 4 is a side view, with the internal parts shown dotted. The cup has a relatively thick base, the floor of which has three symmetrically arranged sector-shaped slots 7, 8, 9 cut through it, and also a central cylindrical hole 10. Moulded or otherwise secured through the base of the cup are a number of flat contact springs 11, the form of one of which springs can be seen in Fig. 9. These contact springs are arranged in a circle and are spaced apart in the same manner as the pin terminals 2 of the valve. These contacts have been omitted from Fig. 4 in order to make the construction of the holder clearer.

The center of the holder is occupied by the circular rotatable member 12 of insulating material shown in Figs. 5, 6 and 7. The top of the member 12 seen in Fig. 5 is plain, and a number of grooves 13 are cut round the periphery to accommodate the pins 2 of the valve. A central key-hole 14 is cut to accommodate the plug 3 and key 4 of the valve.

The plain portion of the member 12 extends only for about half its thickness, but three sector-shaped legs 15, 16, 17 depend from its underside. These legs are designed to project through the sector-shaped holes 7, 8, 9 in the base of the holder 5 when the member 12 is placed in the center of the cut as indicated in Fig. 4. The angular width of the legs is slightly less than that of the sector-shaped holes so as to allow the member 12 to ro-

tate through an angle equal to about half the angle subtended at the center by two of the adjacent contact springs 11. The member 12 is secured vertically in position inside the cup by means of a plate 18 held in abutment against the underside of the holder by screws 31 cooperating with corresponding holes 32 in the legs 15, 16, 17, which holes are visible in Fig. 7.

The member 12 has a circumferential recess 19 cut therein to provide clearance space to allow the contact springs to be bent slightly inwards to form contact discs 33 as seen in Figure 9. The slots 7, 8, 9 are oriented with respect to the contact springs and the legs 15, 16, 17 with respect to the grooves 13 so that, when the valve is inserted in the member 12 with the grooves 13 roughly midway between the corresponding contact springs 11, the member is rotatable in a single direction, e. g. the clockwise. The valve is then inserted with the pins in the grooves, and the valve together with the member 12 is rotated clockwise until the pins come under the corresponding contact springs 11, the contact discs 33 of which are normally sprung slightly into the recess 19. These discs are made slightly convex towards the pins to enable this movement to be made. It will be understood that the contact discs will ride up on to the pins as shown in Fig. 10, so that a good contact pressure will be obtained, and the contacts will be substantially self-cleaning.

The cup moulding 6 of the holder is fixed to two thin sheets 20, 21 of metal which are secured together by welding for instance. The holder may be fixed to the apparatus in which it is used by means of the holes 22 and 23.

In order that the valve may be held securely in the holder without risk of dropping out, the holder may be provided with slotted metal blocks 24 and 25 fixed to the sheet 20, adapted to cooperate with lugs 26 and 27 fixed to a band 28 clamped in the proper position round the base of the valve. These details are visible in Figs. 2 and 8. Two plain blocks 29 and 30 also fixed to the sheet 20 are provided to prevent the valve from being rotated in the wrong direction.

What is claimed is:

A holder for a thermionic valve of the kind having electrode terminals which project from the base parallel to the axis of the valve, comprising a cup-shaped portion of insulating material having resilient contact devices arranged in a circle coaxially therewith and being provided with sector shaped apertures inside said circle of contact devices, said contact devices having the same relative positions as the electrode terminals, a rotatable member having a plurality of sector-shaped legs engaging corresponding sector-shaped apertures in said cup-shaped portion and having a circular movement therein less than the angle subtended by two adjacent contact devices, said rotatable member being provided with parallel grooves also in the same relative positions as the electrode terminals and a groove tranverse to said parallel grooves and extending around said rotatable member, said contact devices each having a contact portion bent into said transverse groove for contacting said electrode terminals upon insertion of said valve with its electrode terminals in said parallel grooves and rotation with said said rotatable member.

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