Dec. 5, 1939. M. ALDEN 2,182,607

TUBE SHIELD

Filed Oct. 16, 1939

Fig. 1.

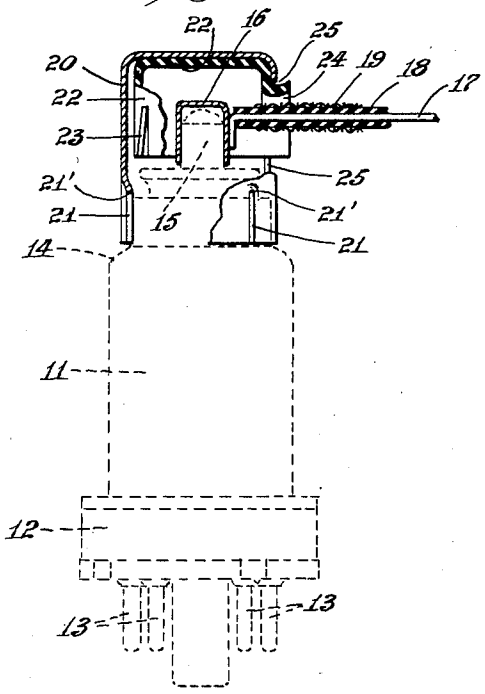


Fig. 2.

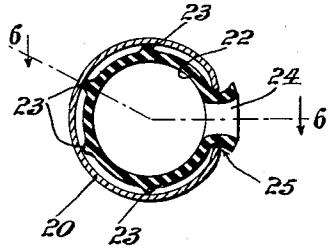


Fig. 4.

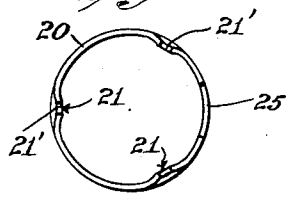


Fig. 3.

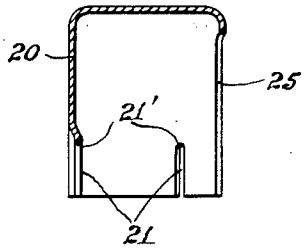


Fig. 5.

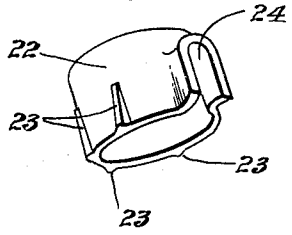
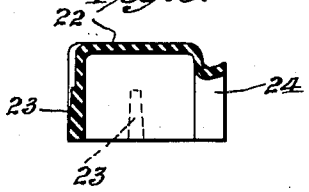


Fig. 6.



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Patented Dec. 5, 1939 2,182,607

UNITED STATES PATENT OFFICE

2,182,607

TUBE SHIELD

Milton Alden, Brockton, Mass.

Application October 16, 1939, Serial No. 299,581

4 Claims. (Cl. 250—27.5)

This invention relates to a shield for use especially in connection with the electrostatic shielding of the grid caps of radio tubes, and more particularly in connection with the shielding of the grid caps of tubes of the type using a metallic shield covering or constituting the exterior of the tube and extending closely adjacent such grid cap.

This invention is particularly adapted for use upon so-called all-metal tubes, which are provided with a shoulder upon which the shield can rest.

One purpose of this invention is to provide a shield which will make firm electrical contact to the metal shield of the body of the tube, so that it will be properly grounded.

Another purpose is to provide a shield with internal lining insulation at such points that it will be impossible for the grid cap of the tube, the clip attached to such cap, or the bare portions of the wire attached to the clip, to come in contact with the grounded shielding.

Another object of the invention is to provide a shield of the type described in which the lining insulation may be formed of relatively rigid material, and yet may be inserted into the shielding shell without difficulty, and will not rattle or become loose therein, or fall out of the shell.

Another purpose is to avoid the use of any supplementary fastening means to retain such insulating lining within the shield.

It has been proposed to line such a shield with rubber or fibre, but such materials either are adversely affected by the heat of the tube, or else will give too great a degree of leakage.

Referring now to the drawing hereunto annexed:

Fig. 1 shows my shield in place upon the top of a metal tube, together with the grid clip and wire attached thereunto.

Fig. 2 is a section of the shield with the lining in place therewithin.

Fig. 3 is a vertical sectional view of the shield proper.

Fig. 4 is a bottom plan view of the shield of Fig. 3.

Fig. 5 is a perspective view of the insulating lining removed from the shield.

Fig. 6 is a vertical section of the insulating lining on the lines 6—6 of Fig. 2.

A conventional tube is shown at 11, with a base portion 12 and prongs 13. At the top of the tube is the shoulder portion 14 and the projecting grid cap or tip 15. Around this cap is a suitable clip 16, from which extends connecting wire 17, having an insulating covering 18, which in turn is usually provided with an outer metallic shielding covering 19, although my invention is not limited to use with a metallic shielding on the conductor. The insulation of my shield may merely prevent grounding of the connecting wire proper.

Shield 20 is slitted to provide resiliency and slips over shoulder 14. The edges of the slits 21 preferably project slightly inwardly and make a firm cutting line contact with the outer surface of the tube shoulder 14. If so desired the slitted portion of the shield may be slightly reduced in diameter so that it may both exert a tighter grip on the tube, and may tend the better to retain the insulating lining within the shield.

The lining body 22 of molded insulation is provided with a plurality of ribs 23 and a hooded projection 24 which serves to line the slot 25, in the shield body, through which projection the wire passes from the grid clip to the exterior of the shield. The ribs 23 are tapered so that the thickest portion lies near the rim of the lining. These ribs are of a material softer than the metal of which the shield is formed, and are placed around the circumference of the lining so that when the latter is inserted within the shield, the ribs will not coincide in angular position with the slits in the shield. Likewise these ribs are somewhat in the nature of guides, so that they tend to allow motion of the lining into the shield, and to oppose motion in the reverse direction.

During the assembling of this shielded device, the lining will readily slip by the slits 21, even though their edges project inwardly, since the ribs serve to center the lining within the shield, and since the diameter of the lining body may thus be made considerably less than the interior size of the shield proper.

It is to be noted that in addition to the retaining action of the ribs just referred to, the hooded portion 24 may be made of such size that it will be a snug fit within the aperture 25. Also, the ends 21' of the slitted portion of the shield may be of sufficiently small diameter to serve as secondary or ancillary retaining members, in case the lining should become loosened in the upper portion of the shell. It is desirable, though not necessary that the depth of this shield device be made shallow enough so that the top of the grid clip will not be separated by any considerable distance from the inner bottom surface of the insulating lining.

While it is not needed with this type of construction yet it is possible also to apply cement to part of the surface of the lining so that it will adhere to the inner surface of the shell.

I claim:

1. A shield for a tube tip comprising a cup-like metallic cap having slits in its edges to provide resiliency sufficient to grip a tube tip and an insulating cup wedged in the cap for housing a clip and having a slotted projection at one side for projecting through a slot of the cap and guarding a cable armor connected to the clip on the tube tip.

2. A shield for a tube tip and its connected clip and cable connection comprising a metallic cup member having longitudinally extending sharp gripping edges for gripping a shoulder of the tube, a molded insulating cup having ribs engaging the inner walls of the cup member to hold the parts together.

3. A shield for a tube tip comprising a metallic cup-like member having spring jaws for gripping the side walls of a tube, an insulating cup-like member having tapered ribs on its outer wall wedged into the cup-like metallic member.

4. A shield of metal in cup-like form having slits in its edge with the edges of the slots turned inwardly to provide spring gripping jaws and an insulating cup held in the cup-like metallic member by engagement with the inner wall between the slits.

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