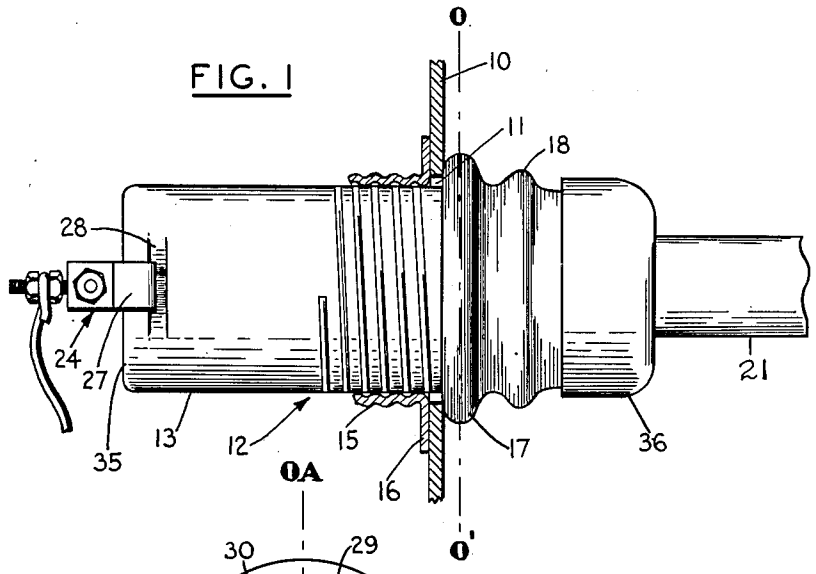
March 3, 1953 S. C. MILLER 2,630,469

HIGH-VOLTAGE ELECTRODE HOUSING FOR GASEOUS DISCHARGE TUBULAR LAMPS

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FIG. 1



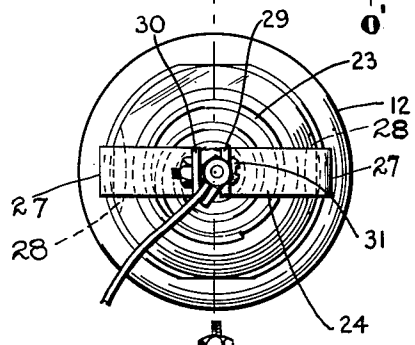


FIG. 2

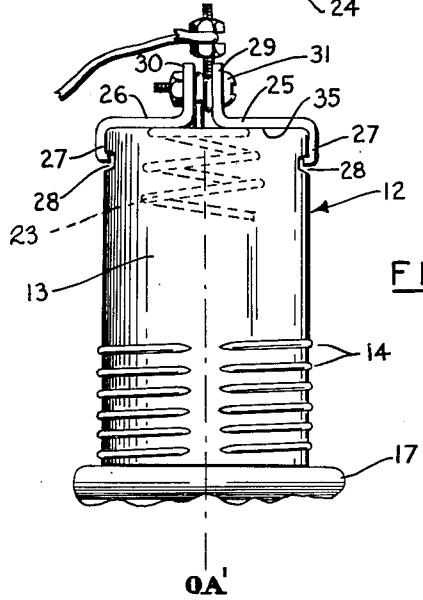


FIG. 3

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FIG. 4

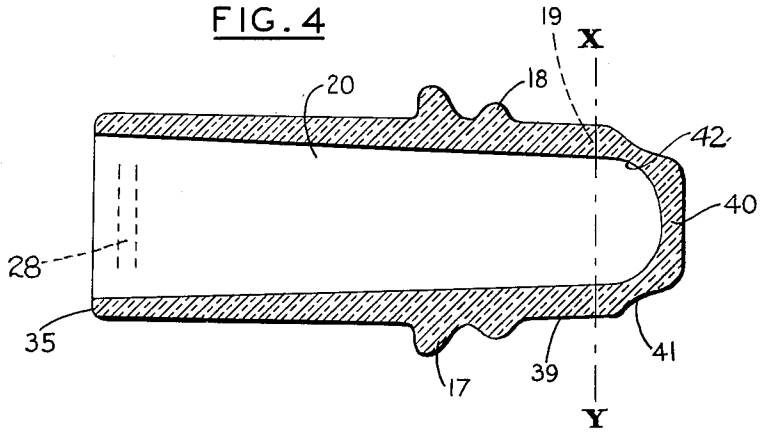
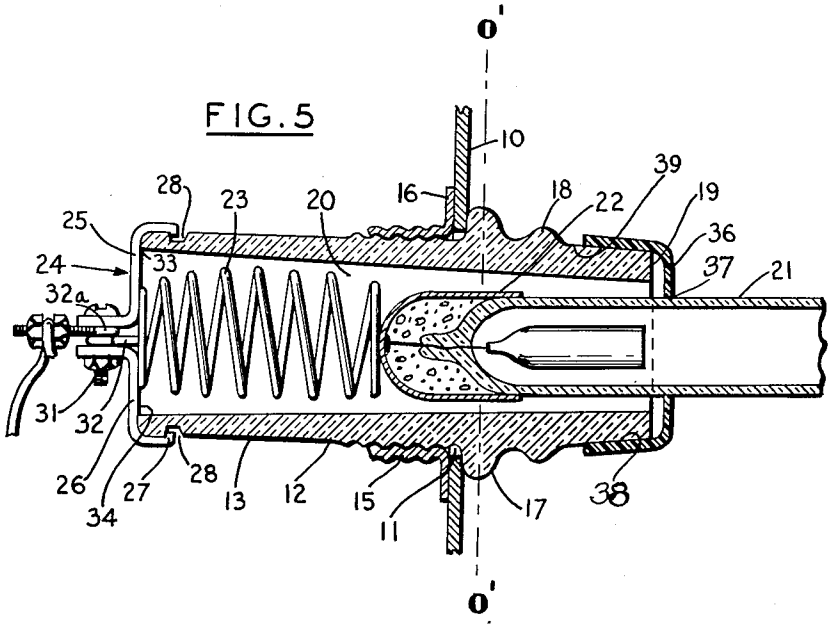


FIG. 5



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UNITED STATES PATENT OFFICE

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HIGH-VOLTAGE ELECTRODE HOUSING FOR GASEOUS DISCHARGE TUBULAR LAMPS

Samuel C. Miller, New York, N. Y.

Application February 17, 1949, Serial No. 77,015

1 Claim. (Cl. 173—328)

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This application refers to insulators, more particularly to high voltage electrode housing insulators including terminal contact mounts for neon tube sign illuminants or similar high voltage operating gaseous discharge tubes. This invention is an improvement over my invention described and claimed in my Patent No. 2,046,960 of July 7, 1936.

Insulator housings of the character set forth in my patent, especially where employed outdoors, while satisfying the requirements as to drainage of accumulated moisture and rain water when exposed to the weather on a framework for the sign has its shortcomings in use in sections where the light attracts insects and which thereby accumulate in the space between the electrode terminal end of the gaseous discharge tube and the insulator housing. Efforts to overcome this problem by providing a covering cap have not solved the problem since the cap, positioned to cover the circumferential space between the tube and the housing, resulted in interference with the drainage of rain water or other moisture which may likewise accumulate in such space.

The commercial processes known to me for making insulator housings of the type above described, particularly of glass and specifically of boro-silicate glasses, such as Pyrex, place a limit upon the configuration which may be imparted to the housing by die-casting and plunger core operations and simple expedients for the solution of the problem presented in the use of insulator housings of the type described have not been successful.

It is an object of my invention to provide a high voltage electrode insulating housing for assembly of gaseous discharge tubes as herein described, and for a method of forming such housings which will embody therein the features of proper drainage, support for the terminal post for clamping the contact and which may have assembled therewith an insect excluding cap, all of which features are retained without sacrifice of the economies involved in producing the insulator, especially with glass of the aforesaid relatively high temperature fluxing which is cast into the desired contour by die-casting and plunger core operations.

Still more particularly it is an object of my invention to provide a high voltage electrode housing and a method for its production characterized by the features of providing simple casting contours, drainage outlets and support for an insect excluding shield, all produced by

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the use of the minimum amount of heat resistant material for the mold parts so that the mold and the core plunger may be used repeatedly without erosion, warping, burning or disfiguring of the mold plunger and parts.

To attain these objects and such further objects as may appear herein, or be hereinafter pointed out, I make reference to the accompanying drawing forming a part hereof, in which—

Figure 1 is a longitudinal sectional view through my electrode housing and terminal mount showing a fragment of the sign frame to which the electrode is attached;

Figure 2 is a rear view thereof;

Figure 3 is a longitudinal view taken in the direction of line 3—3 of Figure 1;

Figure 4 is a longitudinal sectional view of my electrode housing blank at one stage of its manufacture;

Figure 5 is a longitudinal sectional view.

Making reference to the drawing, Figure 1 represents, as in my prior patent, a fragment of a neon sign frame 10 having a boring 11 through which the insulator housing 12 projects. A cylindrical body portion 13 is formed with a screw-threaded section 14 to receive the threaded collar 15, to press the flange 16 thereof against the rear face of the frame 10. A flange 17 provides the abutment for the outer face of the frame 10 which cooperates with another peripheral flange 18 spaced from the rim 19. A boring or central aperture 20 may receive axially thereof the gaseous discharge tube 21 so as to project its electrode terminal thimble contact 22 with spring contact 23 supported from the cross bracket 24. The cross bracket comprises a pair of clamp bars or metal straps 25 and 26, each of which has a finger 27 entering into the correspondingly positioned undercut slot 28. Each of the cross bars 25 and 26 terminates into upstanding, transversely bent ears 29 and 30, respectively, through which there is directed the clamp bolt and nut assembly 31, to draw together the ears 29 and 30 against the loop 32 of the spring contact 23 and the loop of the terminal post 32a. The cross bars 25 and 26 have the branches 33 and 34 on their inner surfaces arranged to contact against the finished rim 35 to abut the same.

The smooth finished edge as thus far described with relation to the cross bracket 24 permits of free and unobstructed drainage for almost one half of the area of the boring. Additional features of the boring will be described hereinafter as part of the processing operations for making

the same, thereby providing a taper to the interior wall of the boring 20 to effect drainage in the direction of the rim 35 when the axial line of the housing is horizontally positioned.

The rim 19 may be unfinished, and upon axially positioning the illuminating tube 21, to reach the spring contact, this rim is capped by a capping flange 36. I illustrate a collar shaped cap having a boring 37 through which the gaseous tube projects and a cylindrical flange 38 engaging the neck 39 of the housing above the flange 18. A glass collar may be employed and held in position by insulating cement. I may, however, use hard rubber or a metal cap with a friction fit for the neck 39.

The economies which I may effect may best be understood from a consideration of Figures 4 and 5. In these figures, the raw blank as coming from the mold for making the housing is illustrated, the rim portion 19 having been originally integral with the closed end 40, merging into the rim forming portion 19 by an offset ridge 41 and with an interior wall 42 continuous with the boring 20.

The mold parting lines along the flange and transverse of the blank and longitudinally of the blank, are indicated by the lines O—O' and OA—OA', respectively. Where formed of glass by die-casting operations in a multipart mold and a plunger core, the draught of the mold is tapered so that the flare is widest adjacent the rim 35 and narrowest against the rim 19, which is shown in dotted lines in Figure 4. The rim 35 is therefore finished by die-casting and plunger core operations in the mold.

After removal from the mold, the closed end 40 is removed by a "clean-break" operation along the lines *x*—*y*, leaving a sharp rim of somewhat irregular contour in accordance with the consequent fracture by reason of the "clean break" operation. No further finishing operation need be practiced for the sake of economy unless roughly to remove any dangerously sharp edge in order to receive the capping flange 36. The use of the capping flange which shields the clear break edge not only serves as a shield against the entrance of insects, but effects aforesaid economies by reason of not requiring a grinding down of the rim 19.

Thus, it will be observed that I have provided an insulator housing which is characterized by a support for the terminal post, an enlarged drainage aperture away from the point of possible accumulation of rain water or melting snow, and a shield closing the exposed surface of the sign or frame to ingress by insects, all accomplished economically, particularly adaptable to the moulding of glass, especially that of the Pyrex or boro-silicate type, permitting the mold and the core plunger to be used repeatedly,

without erosion, warping, burning or disfiguration.

It will be understood that while my housing and the method of its production is peculiarly suitable for manufacture from glass, especially boro-silicate glass, it is available for moulding with other insulating materials, such as ceramics.

By "molded surface" as employed in the claim, it is intended to include the visible surface impression conforming to the mold in which the article was cast, as distinguished from a cut, broken, blown, machined, fused, ground or polished surface.

By "unmolded rim" as used in the claim, it is intended to cover that rim portion of a molded article which is adjacent the gate or sprue and requires breakage or removal of the dross or gate or sprue material.

By "clean break" as used in the claim, it is intended to include the remnant of edge adjacent the gate left on breaking by chipping away the sprue or adjacent excess gate material which was added in the casting operation to assure a full mold.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is:

A high voltage electrode housing of insulating material for supporting an electrode tube on a frame having a substantially cylindrically contoured exterior body portion, a mouth at one end thereof through which an electrode tube may pass, a rim at the other end thereof, an integral flange between said ends adjacent said mouth, means on said exterior body portion for mounting the housing to the frame, the interior of said housing being outlined by walls continuously and gradually flaring toward the rim end, forming a drainage passage extending to the rim end, said rim end having indentations exteriorly positioned forming seat portions for supporting terminal mounting means against displacement transversely of said housing adjacent said rim end.

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