Aug. 16, 1960 H. DOELEMAN 2,949,595

LAMP SOCKET RESISTOR

Filed Jan. 12, 1959

FIG. 1.

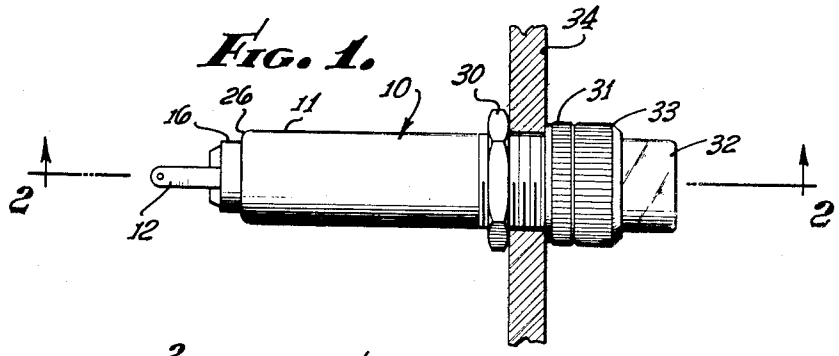


FIG. 2.

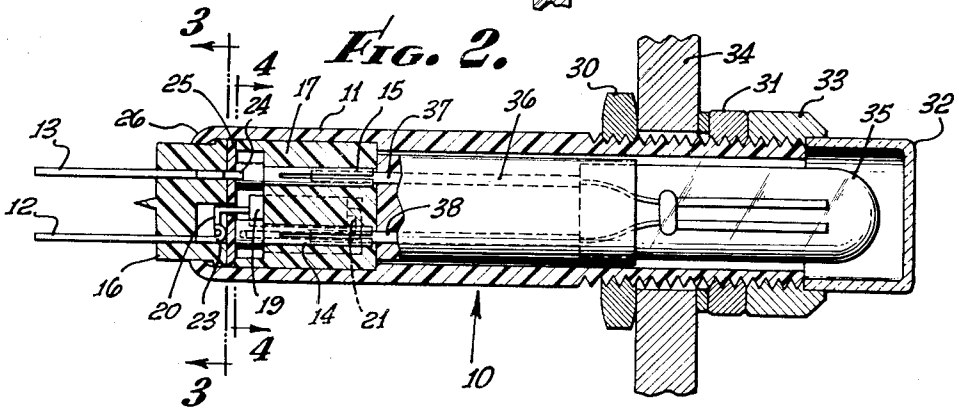


FIG. 3.

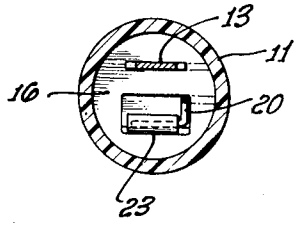


FIG. 4.

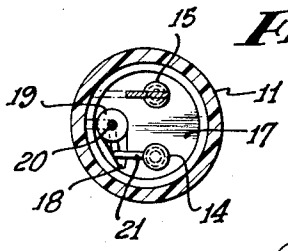


FIG. 5.

INVENTOR.
HENRY DOELEMAN
BY
Delman H. Jansen
AGENT.

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LAMP SOCKET RESISTOR

Henry Doeleman, El Monte, Calif., assignor to Eldema Corporation, El Monte, Calif., a corporation of California

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3 Claims. (Cl. 338—70)

This invention relates to lamp sockets, and more particularly to those of the miniature type adapted for panel display in which a gas discharge lamp is employed requiring a voltage dropping resistor.

In the indicating lamp art, it is known to mount a socket in a panel, so arranged that the socket may hold a lamp and generally containing a cap of some transparent material so as to render the lamp visible from the front of the socket. A widely used type of indicating lamp is a gas-discharge lamp, in which the lamp is activated by a voltage causing a glow in the gas contained in the lamp, which may be argon or neon, most generally the latter. It is necessary to limit the current through such a gas-discharge lamp, and it is known to include in sockets generally for such a lamp a voltage-dropping resistor, which serves the function of a current limiting device. No particular problems arise when the socket for such an assembly can be as large as desired, but in recent years such glow lamps have been employed in an increasing scale in applications requiring drastic miniaturization of the socket, both in the direction of a smaller socket diameter and of a shorter distance which the socket projects behind the panel on which it is mounted, i.e., an over-all short socket is required. Since the voltages required to actuate gas-discharge lamps are rather high, being generally 50 or 60 volts minimum, serious problems arise when miniaturization of the type described is attempted with such assemblies, because short circuits must be guarded against at all costs, and yet the assemblies must be electrically and mechanically fully reliable. Most of the critical problems arise in connecting or attempting to connect the voltage-dropping resistor, which is generally of the tubular double-ended pigtail type for reasons of space and economy.

As will appear from the detailed description which follows, I have invented a novel and useful lamp socket which overcomes the aforesaid miniaturization problems completely, while at the same time permitting ease of manufacture and assembly.

In the attached drawings,

Figure 1 is a side view of my inventive lamp socket assembly shown in place mounted through a hole in a panel.

Figure 2 is an enlarged drawing, partly in section, of the device shown in Figure 1.

Figure 3 is a cross-section taken at the point indicated by the dashed lines in Figure 2, and looking toward the rear of the socket assembly.

Figure 4 is another cross-sectional view taken at the point indicated in Figure 2, and looking toward the front of the lamp socket assembly.

Figure 5 is an exploded view of the interior parts of my lamp socket assembly.

Coming now to Figures 1 and 2, it will be seen that I provide a socket consisting generally of a tubular housing **10** which may be conveniently threaded on its front and so as to receive lock nuts **30** and **31**. The front end of the socket assembly is capped by a transparent

cap or lens **32**, of perhaps polystyrene or methyl methacrylate polymer, mounted in a threaded shell **33**. The assembly is shown in place on a panel **34** of which only a fragment is shown in the drawings.

For clarity of explanation of my invention, there is shown in Figure 2 a neon glow lamp **35** in its own base **36** having a pair of pins **37** and **38** for electrical connection.

The rear portion of the tubular housing **10** is undercut for a portion of its length adjacent to the end as appears from Figure 2. Seated in this undercut portion are a first holder **16**, a spacing washer **25**, and a second holder **17**. The configuration of these parts is clearly shown in Figures 2, 3, 4 and 5. Both holders and the spacing washer are made of electrically insulating material, such as a melamine plastic or the like. The first holder **16** has two slots running the entire length of the holder which serve to retain electrodes **12** and **13**. The second holder **17** has first of all a recessed portion as appears partly from Figures 2 and 5, while the balance of the interior of the second holder **17** is penetrated by two circular holes which receive pin sockets **14** and **15**. These are commonly made of brass or Phosphor bronze or beryllium copper, and may be gold-plated. The second holder **17** also has a recess therein which has a tear-drop cross-section, as appears from Figures 2, 4 and 5. Second electrode **13** is mechanically and electrically attached to second pin socket **15** as by soldering. First electrode **12** is mechanically and electrically connected to a lead **20** of the pigtail resistor, the resistor itself being contained in the aforementioned recess in holder **17**. The tear drop shape of this recess allows the second lead **21** of the pigtail resistor to be doubled back so that it can be mechanically and electrically connected to the first pin socket **14**, in the fashion shown in the drawings. The peculiar configuration of the second holder **17** permits an exceedingly compact arrangement of pin sockets and resistor, all properly connected, and with no danger of short circuiting. I have found it convenient to provide a space washer **25**, which serves to hold electrodes **12** and **13** in their proper places and to prevent direct contact of the end of first electrode **12** and first pin socket **14**. This relationship is clearly seen in Figure 2.

The assembly of the device from its component parts will be evident from Figures 2 and 4. After the parts named have been placed in position as shown in Figure 2, the end of the under-cut portion **11**, of the tubular housing is crimped about first holder **16**, thus holding all of the parts permanently together. The neon light **35** can be conveniently replaced by removing cap **33**, and pulling the lamp out through the front of the socket.

It will be seen that the invention accomplishes its objects. It is to be understood that numerous modifications and changes may be made within the spirit of the invention, and the scope of the claims which follow.

What is claimed is:

1. A lamp socket assembly comprising, in combination: a tubular housing having an undercut portion of greater inside diameter than the remainder of said housing adjacent one end thereof; first and second electrodes; first and second pin sockets; a first holder in said housing of insulating material traversed by and retaining said first and second electrodes; a second holder in said housing of insulating material traversed by and retaining said first and second pin sockets; said second holder having a single-ended recess of tear-drop cross-section adapted to hold a pigtail resistor therein; a pigtail resistor having two leads in said recess in said second holders; an electrically conducting juncture between said one lead of said resistor and said first electrode; an electrically conducting juncture between said other lead of said resistor and said first pin socket; and an electrically conducting junc-

ture between said second electrode and said second pin socket.

2. A lamp socket assembly comprising, in combination: a tubular housing having an undercut portion of greater inside diameter than the remainder of said housing adjacent one end thereof; first and second electrodes; first and second pin sockets; a first holder in said housing of insulating material traversed by and retaining said first and second electrodes; a second holder in said housing of insulating material traversed by and retaining said first and second pin socket; said second holder having a single-ended recess of tear-drop cross-section adapted to hold a pigtail resistor therein; a pigtail resistor having two leads in said recess in said second holder; an electrically conducting juncture between said one lead of said resistor and said first electrode; an electrically conducting juncture between said other lead of said resistor and said first pin socket; an electrically conducting juncture between said second electrode and said second pin socket; and a spacing washer of electrically insulating material between said first holder and said second holder and traversed by said second electrode and a lead of said pigtail resistor.

3. A lamp socket assembly comprising, in combination: a tubular housing having an undercut portion of greater inside diameter than the remainder of said housing adjacent one end thereof; first and second electrodes; first and second pin sockets; a first holder in said housing of insulating material traversed by and retaining said first and second electrodes; a second holder in said housing of insulating material traversed by and retaining said first and second pin sockets; said second holder having a single-ended recess of tear-drop cross-section adapted to hold a pigtail resistor therein; a pigtail resistor having two leads in said recess in said second holder; an electrically conducting juncture between said one lead of said resistor and said first electrode; an electrically conducting juncture between said other lead of said resistor and said first pin socket; an electrically conducting juncture between said second electrode and said second pin socket; and a spacing washer of electrically insulating material between said first holder and said second holder and traversed by said second electrode and a lead of said pigtail resistor, said tubular housing being crimped around said first holder so as to maintain it against said spacing washer and to maintain said spacing washer against said second holder.

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