March 27, 1956 E. A. BOGUE ET AL 2,740,111

COMBINED SIGNAL LAMP AND RESISTOR

Filed Aug. 21, 1952

Fig. 1

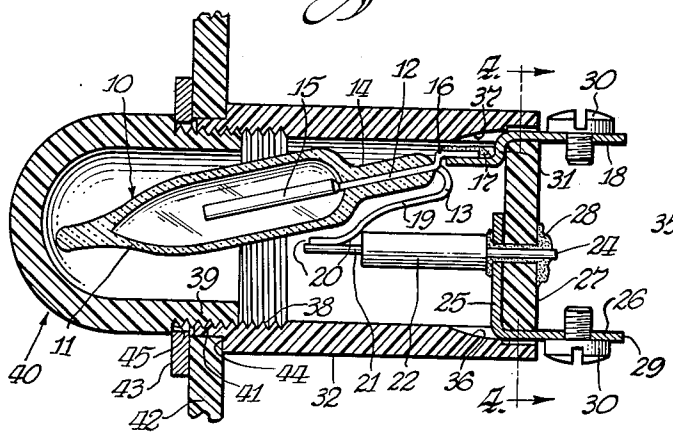


Fig. 2

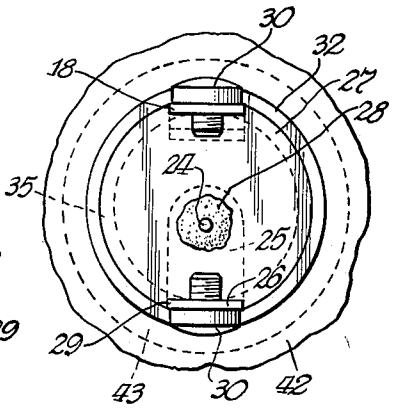


Fig. 3

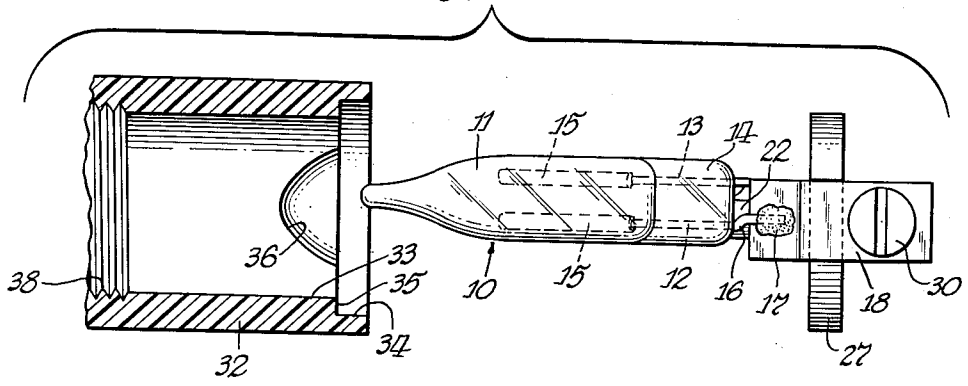
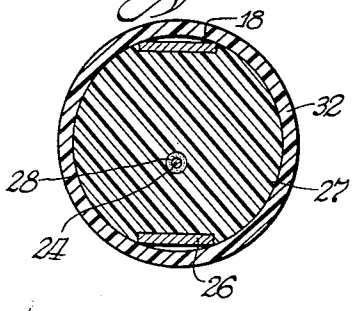


Fig. 4



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COMBINED SIGNAL LAMP AND RESISTOR

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1 Claim. (Cl. 340—381)

Our invention relates to a signal lamp assembly, and more particularly to an assembly of this type which comprises a signal lamp, a resistor, and a supporting enclosure therefor.

An object of our invention is to provide a new and improved structure and arrangement for a signal lamp assembly which facilitates the fabrication, mounting and replacement thereof. In the disclosed embodiment of our invention, the assembly involves a tubular housing element and a base, the structure and arrangement of which are such that a signal lamp and associated resistor, as well as appropriate connecting terminals, are mounted on the base, and then the base and the tubular housing element are assembled. The structure and arrangement are also such that the securement of the parts in their assembled relationship is completed by assembly of the base and housing element.

Another object of our invention is the provision of a signal lamp assembly, the construction and arrangement of which are such that the mounting of the assembly on a suitable support is facilitated. In the disclosed embodiment of our invention, the assembly includes a tubular housing element and a cap which are separably connected to one another in such a way that a supporting structure may be gripped there-between.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings in which similar characters of reference indicate similar parts throughout the several views.

In the single sheet of drawings:

Fig. 1 is a longitudinal sectional view through a preferred embodiment of our signal lamp assembly and shows the lamp assembly as it is adapted to be mounted on a suitable supporting panel;

Fig. 2 is an end view of our signal lamp assembly and support, as viewed from the left of Fig. 1;

Fig. 3 is a fragmenary exploded view, partly in section and partly in elevation, showing parts of our signal lamp assembly in partially assembled relationship; and

Fig. 4 is a sectional view taken substantially on a line 4—4 of Fig. 1, and in the direction of the arrows.

Having reference to the drawing, wherein a preferred embodiment of the invention is shown for illustrative purposes, the reference numeral **10** designates a lamp which, in the embodiment shown, constitutes a sealed gas discharge tube that contains a suitable gas, such as neon, in which a glow type of discharge may occur. Conductors **12** and **13** extend through and are embedded in an elongated end portion **14** of a glass envelope **11**. The conductors carry electrode portions **15** of a suitable metal which are supported in spaced relationship within the envelope **11**. The conductor **12** has a portion **16** external to the envelope **11** which is electrically connected, as by soldering at **17**, to a metal terminal **18**. The conductor **13** is longer than the conductor **12**, and has a portion **19** bent externally of the envelope so as to extend to a position for electrical connection, as by soldering at **20**, to a terminal lead **21** of a resistor **22**. The resistor also has

a terminal lead **24** which extends through a leg **25** of a metal terminal **26** and an insulating disc **27**. In the disclosed structure, a mass of solder **28** is applied to the end of the terminal lead **24** at the face of the insulating disc **27** away from that at which the terminal leg **25** is located and extends through the insulating disc **27** and the terminal leg **25** to secure both the resistor **22** and the terminal **26** to the insulating disc **27**.

The terminal **26** has a second leg **29** which extends angularly from the leg **25** through an edge groove in the insulating disc **27** and projects beyond the exterior face of the disc. A screw **30** is threaded into the terminal leg **29** for attaching a suitable power supply lead, not shown, to the terminal **26**. The terminal **18** is located on the opposite side of the disc **27** from the terminal **26** and extends through an edge groove in the insulating disc, from which it projects beyond the outer face thereof. The opposite end portions of the terminal **18** are offset from one another through shoulder **31** which rests against the interior face of the insulating disc **27**. Also, the external portion of the terminal **18** carries a screw **30** by which a suitable power supply lead, not shown, may be attached to the terminal.

The lamp **10** with its terminal conductors **12** and **13**, the resistor **22**, the metal terminals **18** and **26**, and the insulating disc **27** constitute a sub-assembly that is indicated at the right in Fig. 3 ready to be assembled with a tubular housing element **32** of insulating material indicated at the left in Fig. 3. In this sub-assembly the terminal **26** is secured to the insulating disc **27** by the solder **28** and the resistor end wire **24**, whereas the terminal **18** is only held in place with respect to the insulating disc **27** by virtue of its connection to the conductor portion **16** of the lamp; the lamp being attached to the insulating disc **27** through the conductor **13**, the resistor **22**, and the solder **28**.

The tubular housing element **32**, to which the described sub-assembly is attached, has an opening **33** extending axially therethrough, with an enlarged portion **34** and a shoulder **35** at one end. At diametrically opposed regions, the opening **33** is recessed as indicated at **36** and **37** in Fig. 1, to provide space for the terminals **18** and **26**. The disc **27** is of a size to fit the enlarged portion **34** of the opening **33**, and the disc and housing element are secured together to provide a permanent assembly of the aforementioned sub-assembly with the housing element. The disc **27** and the housing element **32** are, in the present instance, made of a suitable plastic that can be bonded by heat-sealing.

The end of the housing element **32** away from the sub-assembly is internally threaded, as indicated at **38**, to receive an externally threaded open end **39** of a dome-shaped cap **40** which is made of a suitable transparent or translucent material such as plastic. The threaded end of the tubular housing element **32** is reduced in external diameter, as indicated at **41**, to fit within an opening in a support, such as a panel **42**, with an external shoulder **44** abutting one surface of the panel. The cap **40** is screwed into the housing element **32** and has an external shoulder **45** to clamp the panel **42** and a bezel ring **43** against the shoulder **44** and between the cap and the housing element.

The disclosed signal lamp, in one of its adaptations, may be connected across electrical lines that supply power to electrical apparatus to provide a visual indication of whether power is actually being supplied to the apparatus. When line voltage is applied across the terminals **18** and **26** a discharge occurs between the electrode portions **15** of the conductors **12** and **13**, and the lamp **10** glows so as to be visible through the cap **40**. The resistor **22** which is in series with the electrode portions **15** limits the current flow through the lamp after the lamp has begun to operate.

The sub-assembly indicated at the right hand side of

Fig. 3 is adapted to rapid production with a minimum of operations, because there is only one connection of the parts to the insulating disc **27**, that being by way of the solder **28** and the resistor lead **24**. This connection secures the terminal **26** to the insulating disc **27**, but the other terminal **18** is merely loosely positioned in the edge groove of the insulating disc. When the sub-assembly is brought together, as shown in Figure 1, with respect to the housing element **32**, the terminal **18** is secured to the insulating disc **27** by being clamped between the insulating disc and the housing element **32** at the shoulder **31** of the terminal **18**.

From the foregoing description and reference to the accompanying drawings, it may be readily understood that we have provided a structure and arrangement of parts for a signal lamp assembly which promote ease and rapidity of production and assembly, and which utilize a very limited number of parts to provide a signal lamp that is subject to ease of installation and replacement.

While we have illustrated a preferred embodiment of our invention, many modifications may be made without departing from the spirit of the invention, and we do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of all changes within the scope of the appended claim.

Having thus described our invention, what we claim and desire to secure by Letters Patent of the United States, is:

The combination comprising a glow discharge lamp having a pair of conductors extending therefrom in spaced relationship to one another and connected to spaced electrode portions within the lamp, a disc of insulating material having two edge grooves, a first terminal having one leg extending along one face of the disc and a second leg extending angularly from said one leg and through one disc groove to a position beyond the other face of the disc, a resistor having lead wires thereon, the resistor being positioned at the side of said one leg of the first terminal away from the disc, one lead wire of the resistor projecting through said one leg of the first terminal and through the disc, means on the said one lead wire at the said other face of the disc for securing both the resistor and the first terminal in place relative to the said one face of the disc, means connecting one of said conductors to the other lead wire of the resistor for fixing the lamp to the disc through the said one of said conductors and the resistor, a second terminal loosely positioned in the other disc groove and extending beyond the disc faces, means connecting the other conductor to the second terminal, a tubular housing surrounding the lamp and resistor, said disc closing off one end of said housing, and a cap closing off the other end of said housing.

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