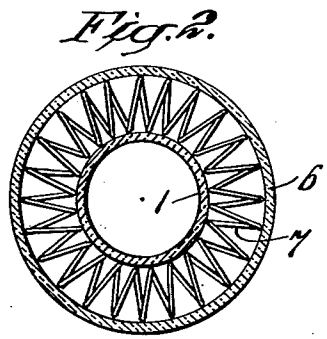
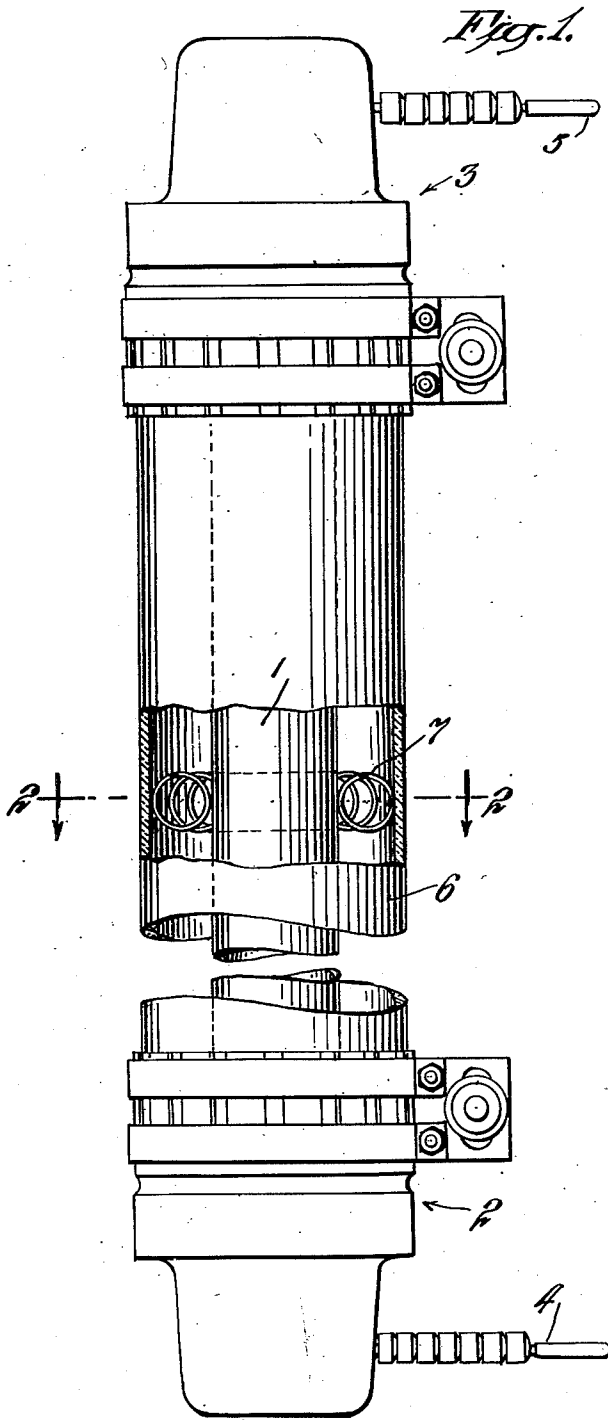


June 25, 1957

E. F. JURICK
VAPOR ARC LAMP

2,797,311

Filed July 21, 1955



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2,797,311

VAPOR ARC LAMP

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Application July 21, 1955, Serial No. 523,546

3 Claims. (Cl. 240--11.4)

The present invention deals with a vapor arc lamp, and, more particularly, with an enclosed tubular mercury vapor arc lamp and support therefor.

Vapor arc lamps of the type employed in blue printing machines, e. g. lamps which are characterized by a considerable increase in vapor pressure after ignition, produce elevated temperatures which are detrimental in blue printing machines and a cooling means must be provided to lessen these high temperatures. Cooling drafts or air currents are generally employed for this purpose. However, since an unprotected lamp operating at a voltage high enough to provide maximum efficiency is sensitive to drafts or air currents, a protective envelope is employed or else the mercury vapor will condense and cause a drop in voltage and a consequent reduction in lamp wattage. Protective light transmissive envelopes for this purpose are well known in the art.

It is desirable to provide the type of lamps above described, including said protective envelope, as a unit and, therefore, end fittings are required to support the lamp unit structure.

However, lamps employed in blue printing machines have considerable length, e. g. four feet in length with a diameter of about one-half inch or three-fourths inch and during handling, such as shipping, the tubular lamp vibrates within the outer envelope resulting in lamp breakage. Also, when these lamps are operated for a long time, the arc tube develops a tendency to sag within its outer protective envelope.

A conventional supporting means for the arc tube centrally positioned between the arc tube and an outer envelope produces shadows on the prints, and for this reason such supports have been discounted.

It is an object of this invention to provide a means for preventing lamp breakage during shipment and lamp sagging in substantially long lamps and at the same time to insure uniform light output of the lamp. Other objects and advantages will be apparent from the description hereinafter following and the drawings forming a part hereof, in which:

Figure 1 illustrates a partly elevational and partly sectional view of a lamp according to this invention, and

Figure 2 illustrates a cross-sectional view along lines 2--2 of Figure 1.

The present invention relates to an elongated vapor arc tube supported at both ends and enclosed within an outer protective tubular envelope of light transmissive material, and with a substantially centrally positioned supporting means between the arc tube and outer envelope.

Referring to the drawings, an elongated arc tube 1 is

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supported at both ends by end fittings 2 and 3 in known manner and with leads 4 and 5 communicating to said ends through said end fittings. The end fittings support an outer envelope 6 as well as the enclosed arc tube 1.

Between said outer envelope 6 and the inner arc tube 1 is a substantially centrally located supporting means consisting of at least one spring member in the form of a wire coil 7 around the inner tube 1, e. g. a toroidal helical coil. The coil 7 is constructed in such manner that the adjacent turns thereof are entirely free from contact with each other, permitting a minimum absorption of light and providing for a support which does not cast shadows on a print. It has been determined that even a partial contacting of the adjacent turns of the coil produces shadows on a print while no shadows are produced when the adjacent turns of the coil are spaced from each other.

While the spring coil 7 is specifically illustrated in the form of a toroidal helical coil, other forms of support coil are contemplated within the scope of the invention so long as the adjacent turns of the coil are free from contact with each other. Otherwise, the term "substantially centrally" with regard to spring location is intended to include the middle one-third of the arc tube length.

What I claim is:

1. A vapor arc lamp unit comprising in combination an outer tubular light transmissive envelope, an elongated high temperature vapor arc tube within said outer envelope, and fittings coaxially supporting the ends of the outer envelope and inner arc tube, an arc tube supporting means between said arc tube and outer envelope positioned substantially centrally of said arc tube, said supporting means comprising a helical spring made of a material which retains its shape when subjected to normal operating temperatures of the arc tube with the adjacent turns thereof being sufficiently free of contact with each other to prevent casting substantial shadow.

2. A vapor arc lamp unit, according to claim 1, wherein said spring is of toroidal form.

3. A vapor arc lamp unit for use in a printing machine comprising in combination an outer tubular light transmissive envelope, an elongated high temperature vapor arc tube within said outer envelope, end fittings coaxially supporting the ends of the outer envelope and inner arc tube, an arc tube supporting means between said arc tube and outer envelope positioned substantially centrally of said arc tube, said supporting means comprising a helical spring made of a material which retains its shape when subjected to normal operating temperatures of the arc tube with the adjacent turns thereof being sufficiently free of contact with each other to prevent casting substantial shadow on the printing machine.

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