

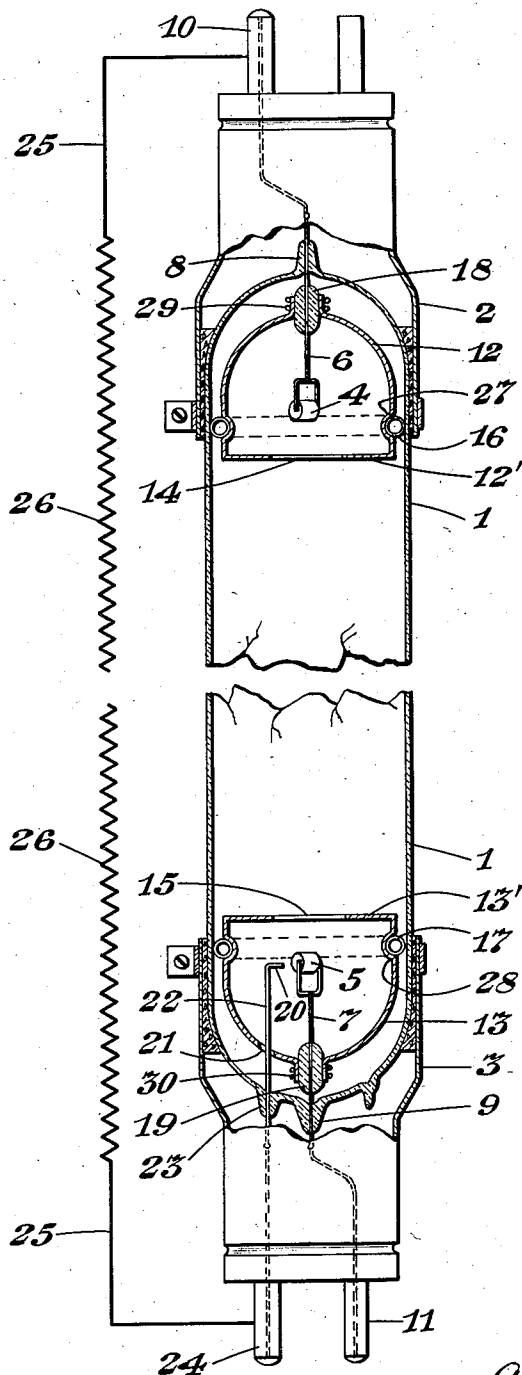
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GASEOUS ELECTRIC DISCHARGE LAMP DEVICE

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GASEOUS ELECTRIC DISCHARGE LAMP
DEVICE

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eral Electric Company, a corporation of New
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2 Claims. (Cl. 176-122)

The present invention relates to gaseous elec-
tric discharge lamp devices generally and more
particularly the invention relates to such devices
of the type disclosed in co-pending application,
Serial Number 642,319, filed November 11, 1932,
the inventor being Karl Becker and co-pending
application Serial Number 592,138, filed February
10, 1932, the inventors being Karl Becker and
Marcello Pirani, wherein the discharge is a con-
stricted discharge as distinguished from a diffuse
discharge.

By a constricted discharge is meant a dis-
charge which has the appearance of a luminous
thread, string, or cord, appreciably smaller in
diameter than the diameter of the container.
By a diffuse discharge is meant a discharge
which fills the bore of the container and from
which the thread, string or cord effect is absent.

A constricted discharge is an efficient, high
intensity light source but the temperature there-
in is so high that a lamp container made of the
usual container glasses, such as lead, lime or soda
glass, softens and blackens and/or breaks if the
discharge comes into close proximity to the walls
of the container. This type of discharge has a
tendency to shift its position in the container
frequently approaching the container walls to
their detriment during the operation of the lamp
device and the structure of the lamp devices dis-
closed in the co-pending applications referred to
prevents the discharge from coming into close
proximity to the container walls.

The object of the present invention is to im-
prove the structure and simplify the manufacture
of gaseous electric discharge lamp devices of the
above type. Still further objects and advantages
attaching to the device and to its use and opera-
tion will be apparent to those skilled in the art
from the following particular description.

In accordance with this object the invention
comprises a tubular container having a ther-
mionic electrode at each end thereof and a cham-
ber for each of said electrodes which chamber
opens in the direction of the discharge path be-
tween said electrodes to guide the discharge away
from the walls of the container and along the
longitudinal axis thereof. The chamber is firmly
supported by resilient means pressing against
said chamber and the walls of said container.

In the drawing accompanying and forming
part of this specification an embodiment of the
invention is shown in a front elevational, partly
sectional view.

Referring to the drawing the new and novel
gaseous electric discharge lamp device comprises

a tubular container 1 having a gaseous atmos-
phere therein comprising a gas, a gas mixture, a
vapor, a mixture of vapors, or a mixture of a
starting gas and a metal vapor, such as a mixture
of argon and mercury vapor. Bases 2 and 3 are
cemented onto opposite ends of said container 1.
Thermionic electrodes 4 and 5 are mounted on
current leads 6 and 7 respectively sealed into the
thickened parts 8 and 9 respectively at opposite
ends of said container 1. Said electrodes 4 and
5 consist of a closely coiled filament, such as a
tungsten filament, wound around a compact rod
of electron emitting material, such as barium
oxide. When desired, the filament is coated with
such material before being mounted in the con-
tainer. The ends of said current leads 6 and 7
external to said container 1 are connected to the
contacts 10 and 11 respectively of the bases 2
and 3 respectively. Each of said electrodes 4
and 5 is surrounded by a cup shaped metal cham-
ber 12 and 13 respectively having a flange 12'
and 13' on the part thereof facing the discharge
path between said electrodes 4 and 5. The dis-
charge between said electrodes 4 and 5 passes
through and is guided by the openings 14 and 15
formed in said chambers 12 and 13 by said flanges
12' and 13' and is thus prevented from coming
into contact with the wall of said container 1.
Each of said chambers 12 and 13 has a circular
groove 16 and 17 respectively into which
fits a resilient, circular coiled spring 18 and 19
respectively. Said springs 16 and 17 press
against the chambers 12 and 13 and against the
inner wall of said container 1 to firmly support
said chambers 12 and 13 in said container 1 and
to separate said chambers 12 and 13 from the
walls of said container 1.

Glass beads 18 and 19 are fused to the leads
6 and 7 respectively and a slitted sleeve protrud-
ing from the rounded wall of each of said cham-
bers 12 and 13 is clamped on said beads 18 and
19 by the wires 29 and 30 respectively. The metal
chambers 12 and 13 are prevented from moving
longitudinally along said container 1 and are
electrically insulated from said current leads 6
and 7 which prevents the discharge from trans-
ferring to said chambers 12 and 13 during the
operation of the device.

An auxiliary electrode 20, mounted on the lead
22 which extends through the opening 21 in the
chamber 13 and which is fused to the part 23 of
the container 1 and connected to the contact pin
24 of the box 3, is adjacent said electrode 5. Said
contact pin 24 is connected by lead 25 and the
resistance 26 to the contact pin 10 to which the

lead 6 of the electrode 4 is connected. During the starting of the lamp device an auxiliary discharge takes place between said main electrode 5 and said auxiliary electrode 20 to facilitate the starting of the main discharge between said main discharge supporting electrodes 4 and 5.

The chambers 12 and 13 are easily mounted in said container 1 during the manufacture of the device and prevent the discharge from approaching the walls of the container 1 during the operation of the device. When the distance between said electrodes 4 and 5 is too great for the guiding effect of the chambers 12 and 13 to extend the length of the discharge guiding means, such as the perforated diaphragms, or half-discs, disclosed in the co-pending applications, are mounted along the container 1 between the chambers 12 and 13 to guide the discharge along the axis of the container 1.

While we have shown and described and have pointed out in the annexed claims certain novel features of the invention, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its use and operation may be made by those skilled in the art without departing from the broad spirit and scope of the invention, for example, each of said chambers 12 and 13 are supported by a pair of resilient, circular springs, when desired, and said container 1 likewise has circular grooves into which said springs fit to

prevent longitudinal movement of said chambers 12 and 13 along said container 1 and the mechanical support between leads 6 and 7 and said chambers 12 and 13 is then omitted, when desired.

What we claim as new and desire to secure by Letters Patent of the United States is:—

1. A gaseous electric discharge device comprising a container, electrodes and electrode leads sealed therein, a gaseous atmosphere therein, a chamber in said container for each of said electrodes, said chambers being separated from said container, attached to said electrode leads and opening in the direction of the discharge path between said electrodes and resilient support means interposed between and pressing against the inner wall of said container and the outer wall of each of said chambers.

2. A gaseous electric discharge device comprising a container, electrodes and electrode leads sealed therein, a gaseous atmosphere therein, a metal chamber in said container for each of said electrodes, said chambers being separated from said container, attached to said electrode leads and opening in the direction of the discharge path between said electrodes and resilient support means interposed between and pressing against the inner wall of said container and the outer wall of said chamber, said chambers being electrically insulated from said leads.

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