April 27, 1965 H. ULFFERS 3,180,981

AIR COOLED PROJECTION LAMP

Filed Oct. 5, 1962

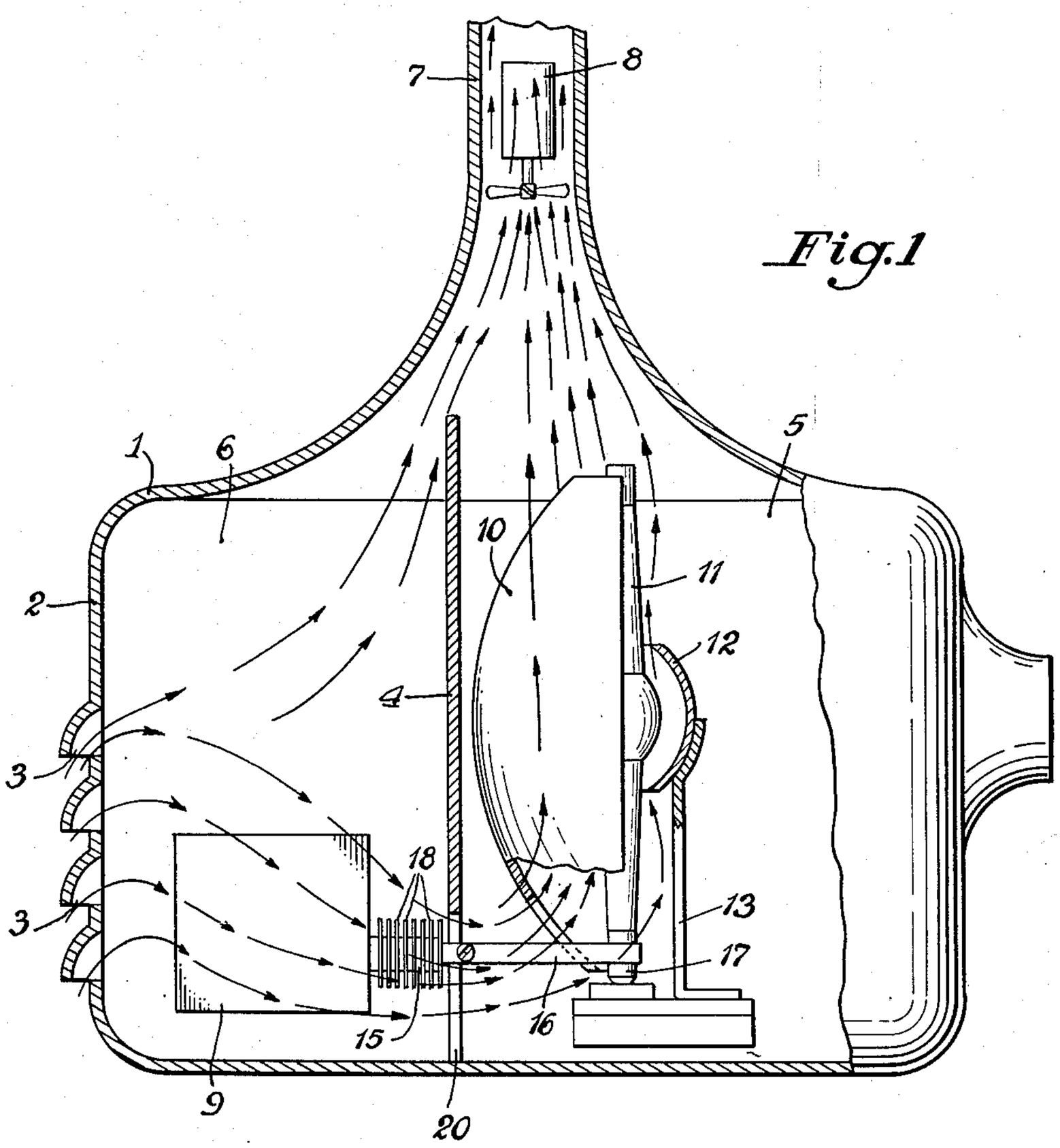

Fig. 1

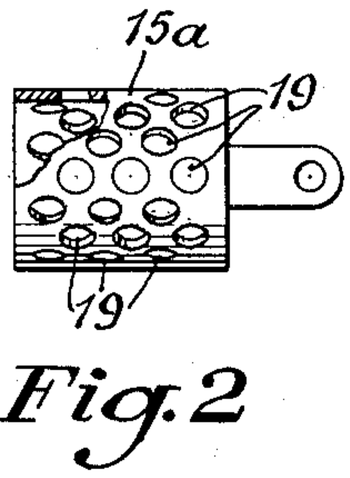

Fig. 2

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AIR COOLED PROJECTION LAMP

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2 Claims. (Cl. 240—47)

The invention relates to improvements in projection lamps provided with air cooling means and particularly is directed to a projection lamp which employs as a source of light a high pressure gas discharge lamp whose ignition device is arranged in the lamp housing so as to be subjected to the cooling effect of an air current passing through the lamp housing.

It is an object of the invention to provide a novel method and novel means for effectively cooling not only the high pressure gas discharge lamp in the lamp housing, but also the ignition device and the connecting terminals on the lamp and the ignition device. This is accomplished by providing means for directing a cooling air current over the ignition device—whereby this cooling air currrent preferably is concentrated upon the HF terminal of the ignition device—to the lamp bulb and the reflecting mirrors associated therewith and from there to a suction discharge opening or channel in the top of the lamp housing.

Another object of the invention is to produce a cooling air currrent by making use of the thermal ascension property of the air cooling current passing through the lamp housing and by providing the HF terminal of the ignition device with an enlarged surface for facilitating the heat radiation. This can be done by providing the HF terminal with cooling fins or by constructing the HF terminal in the form of a tubular member having apertures in its wall. Such arrangements prevent heat damage on the ignition device and on the electric conductors leading from the latter to the lamp bulb. Furthermore, the cooling air reaching the lamp bulb is already somewhat preheated which is very favorable for a cooling of the high pressure gas discharge lamp because the latter will not be hit by an excessively cool air current which would decrease the light capacity relatively to the electricity consumption.

With these and other objects in view the invention will now be described in greater detail with reference to the accompanying drawing, in which:

FIG. 1 illustrates diagrammatically in a side elevational view and with certain parts in section and other parts broken away, an air cooled projection lamp employing a high pressure gas discharge lamp and an ignition device therefor, and

FIG. 2 illustrates a tubular connecting terminal between the ignition device and the lamp and which may be employed in FIG. 1 in place of the connecting terminal provided with the cooling fins.

Referring to FIG. 1, a lamp housing **1** is provided in its rear wall **2** with air inlet apertures **3** and with a vertical partition wall **4** dividing the interior of the lamp housing **1** into a front compartment **5** and a rear compartment **6**. The top of the lamp housing **1** is provided with an upwardly directed tubular air discharge channel **7** in which is arranged a suitable suction blower **8** for assisting in the exhaust of the air from the interior of

the housing **1**. In the rear compartment **6** is arranged an ignition device **9**. The front compartment **5** has mounted therein the main reflecting mirror **10**, the high pressure gas discharge lamp **11** and the auxiliary reflecting mirror **12** with their respective supporting accessories **13**.

The ignition device **9** is connected with its HF terminal **15** to a conductor **16** leading to the lower terminal **17** of the high pressure gas discharge lamp **11**. This HF terminal **15** is provided with cooling fins **18** to facilitate the heat radiation. As illustrated in FIG. 2, a somewhat modified HF terminal may consist of a tubular member *15a* provided with apertures **19** in its wall.

The lower portion of the partition **4** is provided with a cut-out **20** through which passes the conductor **16**. This cut-out **20** is of sufficient size that it also permits to pass therethrough the main portion of the air currrent which enters the apertures **3** in the rear wall **2** of the housing **1**. This main portion of the air current passes over the ignition device **9**, is concentrated upon the HF terminal **15** before it passes through the cut-out **20** and then passes upwardly along the reflecting mirrors **10** and **12** and the lamp **11** and finally is discharged from the lamp housing **1** by way of the channel **7** with the assistance of the suction blower **8**.

A secondary air cooling currrent passes directly from the inlet apertures **3** through the upper portion of the compartment **6** and then through the discharge channel **7** and in this manner vents the compartment **6** containing the ignition device **9**.

What I claim is:

1. The combination with a projection lamp housing having front, side and rear walls connected by a top wall, said front wall being provided with a light emission opening, of a substantially vertical partition spaced between said front and rear walls separating said housing into a front compartment and a rear compartment, a high pressure gas discharge lamp in said front compartment, a reflector in front of said partition for projecting light rays through said light emission opening in said front wall, an ignition device with a HF terminal in said rear compartment connected to said lamp, said high frequency terminal being arranged to extend through a cut-out in the lower portion of said partition for permitting the passage of an electric conductor from said HF terminal to said lamp and for permitting the passage of an air current from said rear compartment to said front compartment, an air exhaust channel in said top wall, intake openings in said rear wall for introducing air into said rear compartment, blower means in said air exhaust channel for discharging air from the top of said housing, whereby a cooling circulatory air currrent is caused to pass first over said ignition device in said rear compartment and its HF terminal and then through said cut-out and upwardly over said high pressure gas discharge lamp and finally through said air exhaust channel.

2. The combination with a projection lamp housing having front, side and rear walls connected by a top wall, a light emission opening in said front wall, of a substantially vertical partition between said front and rear walls separating said housing into a front compartment and a rear compartment, a high pressure gas discharge lamp in said front compartment, a reflector for directing light rays from said lamp through said light emission opening, an ignition device with a HF terminal in said rear compartment, the lower end of said partition having a slot adjacent the lower portion of the housing for permitting

the passage of an electric conductor from said HF terminal to said lamp and for permitting the passage of an air current from said rear compartment to said front compartment, an air channel extending upwardly from said top wall, means for introducing air through the rear wall of said housing into said rear compartment, and means for discharging air through the air channel of the top wall of said housing, whereby a cooling air currrent is caused to circulate first over said ignition device and its HF terminal and then through said slot and upwardly toward said air channel over said high pressure gas discharge lamp.

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