

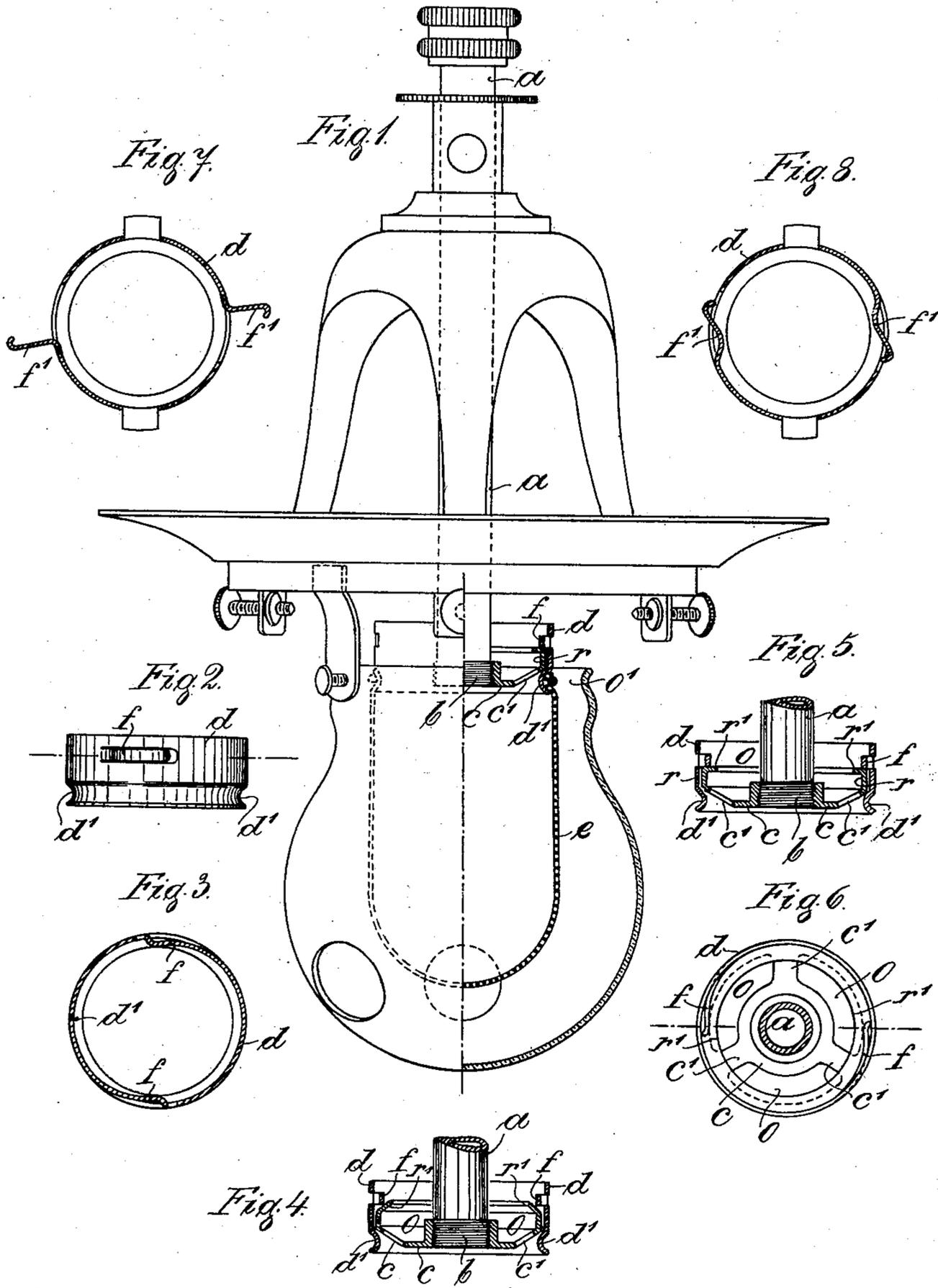
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M. GRAETZ.  
BURNER FOR INCANDESCENT GAS LAMPS.

APPLICATION FILED MAY 6, 1903.

NO MODEL.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

MAX GRAETZ, OF BERLIN, GERMANY.

## BURNER FOR INCANDESCENT GAS-LAMPS.

SPECIFICATION forming part of Letters Patent No. 744,191, dated November 17, 1903.

Application filed May 6, 1903. Serial No. 155,906. (No model.)

*To all whom it may concern:*

Be it known that I, MAX GRAETZ, a subject of the King of Prussia, German Emperor, and a resident of 92 93 Elsenstrasse, Berlin, King-  
5 dom of Prussia, German Empire, have invented certain new and useful Improvements in Burners for Incandescent Gas-Lamps, of which the following is an exact specification.

The attempts hitherto made to manufac-  
10 ture an incandescent light burning downward have not been successful on account of the mantle, the burner proper and the protecting-body not being arranged in a suitable position with respect to one another. By  
15 suitably choosing the position of these three elements a good combustion can be obtained according to the different gas-pressures and other circumstances which come in question. The new arrangement is especially charac-  
20 terized thereby, that the mouth of the burner and the upper end of the mantle are situated at about the same height, and that, furthermore, the protecting-body which is arranged around the mantle is also situated so that its  
25 upper end is about at the same height as the mouth of the burner and the upper end of the mantle, or that the upper end of the protecting-body is situated somewhat below this height. It has been found that in case the  
30 upper end of the protecting-body is situated higher than the mouth of the burner and than the base of the mantle the production of a brilliant flame cannot be obtained with the different gas-pressures.

35 In order to render my invention clearer, I refer to the accompanying drawings, in which—

Figure 1 is a part sectional elevation of an incandescent lamp provided with my new construction of burner. Figs. 2 to 8 are details  
40 of the same.

$a$  is a gas-supply pipe, the mouth  $b$  of which is provided with a flange  $c$ , made of metal, stone, or the like. Around the mouth  
45  $b$  is placed the ring  $r$  for holding the mantle, which ring  $r$  is arranged at about the same height as the burner. Around the ring  $r$  is placed the neck of the protecting glass body, which neck is so large that two annular spaces  $o$  and  $o'$  are formed, each of which is  
50 about eight millimeters broad, through which spaces the products of combustion must es-

cape. In consequence of this restricted area for the exit of the gases, obtained by the arrangement of the neck of the protecting-body at the same height as the mouth of the burner  
55 and as the upper end of the mantle, a throttling of these gases takes place.

Part of the gases escapes upward through the inner annular space  $o$  between the burner and the mantle-holder after having heated  
60 the mantle. The greater part of the gases penetrates, however, through the meshes of the mantle and will escape through the outer annular space  $o'$ . In consequence, however, of the space being relatively small the gases  
65 are kept back and throttled, whereby the heating of the mantle is augmented.

The arrangement of the neck of the protecting-body at the same height as the mouth of the burner has for object not only to form  
70 a small annular space for the escaping gases, but serves at the same time to prevent too strong a flow of the outer air into the protecting-body, which body must be provided with perforations in its lower part, as shown,  
75 in order to equalize the differences arising in the developing of the gaseous products of combustion.

It will be clear that in case the protecting-body projects above the mouth  $b$  of the burner  
80 a sucking action instead of a throttling action for the gases will arise, and in consequence hereof too great a quantity of air will be drawn through the openings in the protecting-body. The quantity of air will in this  
85 case be much larger than is necessary for equalizing the irregularities in the production of the gases, and consequently an unnecessary cooling of the interior of the protecting-body and of the mantle will take  
90 place.

It will be seen from the drawings that the protecting-body has a part spherical form, but it will be understood that any other convenient form may be used.  
95

The construction of the suspending device for the mantle is also of great importance, which device must be easily removable and must insure a correct position of the mantle.  
100 The bayonet-joints which have been hitherto used, in which the mantle is suspended by several hooks, do not form a suitable suspend-

ing device, as the suspended mantle may easily be set into vibration.

According to the present invention springs are used for holding the mantle, the construction and arrangement of which springs are clearly seen in Figs. 2 to 6. These springs form on their lower surface large surfaces of contact with the ring or holder *r* and hold the mantle around a great part of the circumference of this holder.

Fig. 2 shows a sleeve *d*, in which a groove *d'* is provided. In this groove a mantle *e* is fixed in the well-known manner by tying the same on.

*f* represents the horizontal springs, which are punched out and bent inward, as shown in Fig. 3. The springs *f* extend over a great part of the circumference, and their lower edges rest upon the upper edge of the ring *r*, which is connected by three arms *c'* with the mouth-pipe *c* of the gas-supply pipe *a*.

In the modification shown in Fig. 4 the mouthpiece *b c* of the pipe is provided with the ring *r*, which has its upper end *r'* bent inward in order to facilitate the fixing and taking off of the sleeve *d*, which carries the mantle.

In the modification shown in Figs. 7 and 8 the tongues *f'*, punched out of the sleeve *d*, are not elastic and are bent so as to project radially over the sleeve. This sleeve is fixed in this construction by shifting the same over the ring *r* and then pressing the tongues *f* together so that the same bend inwardly, as shown in Fig. 8.

Having thus fully described the nature of

my invention, what I desire to secure by Letters Patent of the United States is—

1. In burners for incandescent gas-lamps burning downward, the combination of a burner-mouth, an incandescent mantle, means for holding this mantle so that the upper edge of the same is about level with the burner-mouth and a protecting glass body, the upper edge of which is about level with the upper edge of the mantle and with the mouth of the burner, the dimensions and arrangement of the burner-mouth, the mantle and the protecting-body being such as to leave small annular spaces between the same for throttling the combustion-gases, substantially as described and for the purpose set forth.

2. In burners for incandescent gas-lamps burning downward, the combination with a burner-mouth, an incandescent mantle, a sleeve to which this mantle is fixed, a ring situated around the burner-mouth and connected to the same by means of arms, means for fixing the sleeve to this ring, and a protecting glass body, the upper edge of which is about level with the sleeve and of the upper edge of the protecting-body being such as to leave small annular spaces for the passage of the combustion-gases, substantially as described and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAX GRAETZ.

Witnesses:

WOLDEMAR HAUPT,  
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