

No. 652,706.

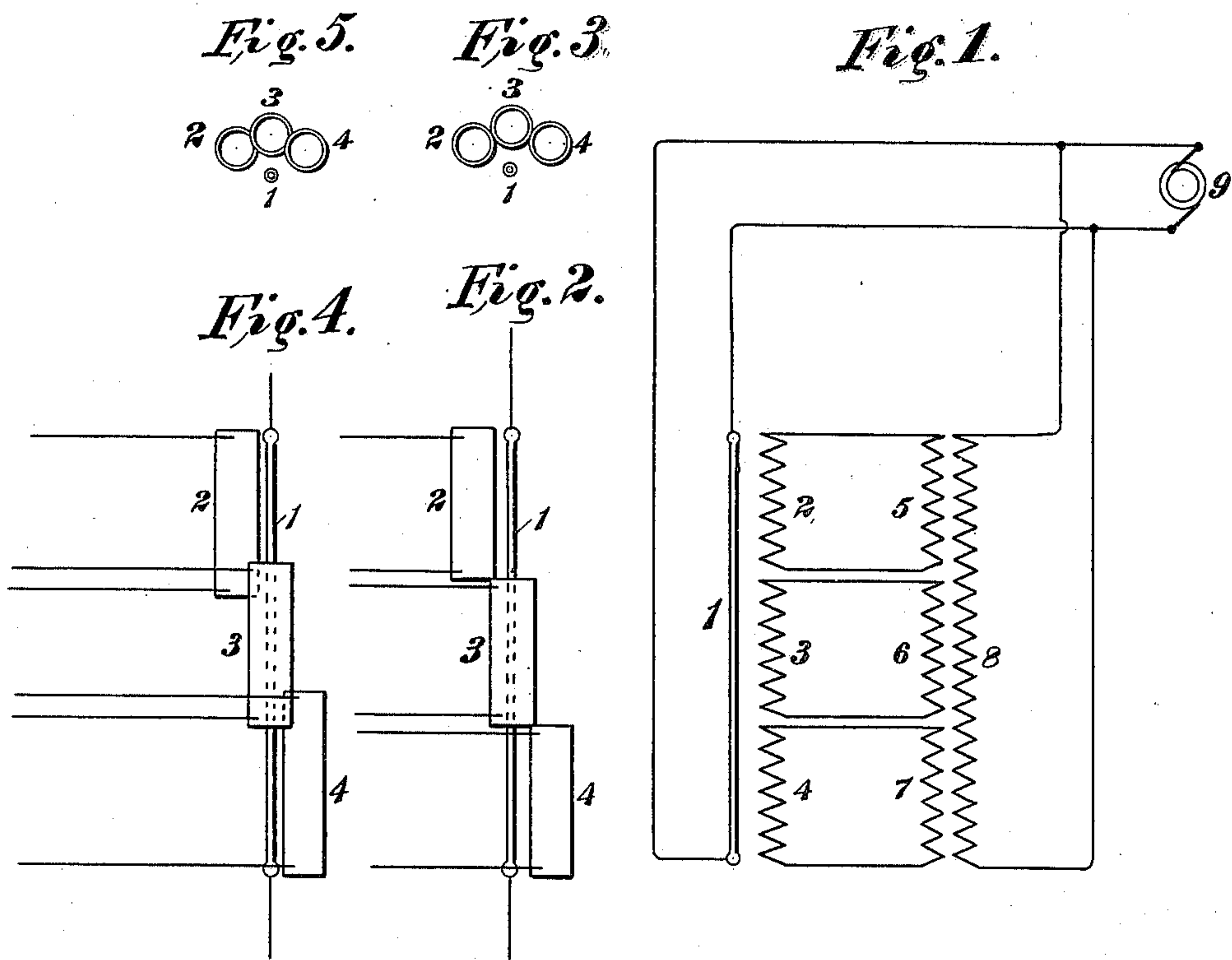
Patented June 26, 1900.

A. J. WURTS.

MEANS FOR HEATING HIGH VOLTAGE GLOWERS.

(Application filed Dec. 7, 1899.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## MEANS FOR HEATING HIGH-VOLTAGE GLOWERS.

SPECIFICATION forming part of Letters Patent No. 652,706, dated June 26, 1900.

Application filed December 7, 1899. Serial No. 739,569. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER J. WURTS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Means for Heating High-Voltage Glow-ers, (Case No. 853,) of which the following is a specification.

My invention relates to electric lamps of the class in which the glower is a non-conductor of electricity when cold, but which becomes a luminous conductor when heated to a certain temperature.

The object of my invention is to provide a means for raising the temperature of the glower of a lamp of the type indicated to the conducting degree without danger of flashing between the heater and glower or other disarrangement of the apparatus. In lamps of the type specified as generally constructed, where the glowers are raised to the conducting temperature by electrically-generated heat, a single heater is ordinarily so arranged adjacent to each glower as to raise the temperature of the glower gradually throughout its length to the desired temperature. This method and means are satisfactorily operative in cases where low or medium voltages are employed; but in cases where the voltage is high the employment of a single heater adjacent to each glower would involve danger of flashing between the heater and glower and might otherwise be dangerous to employ.

I have devised means for heating a long glower suitable for high voltages, which is illustrated in the accompanying drawings.

Figure 1 is a diagram of the glower and the circuits employed in connection therewith. Fig. 2 is a plan view, and Fig. 3 an end elevation, of a glower and its heaters; and Figs. 4 and 5 are views similar to Figs. 2 and 3, but illustrating a modified arrangement.

Referring to the details of construction shown in the drawings, the glower 1 is supplied with energy from any suitable source of the required electromotive force, and arranged in proximity to the glower are three heaters 2, 3, and 4, these heaters being respectively disposed adjacent to different portions of the

glower, and thus acting, so far as the heating effect is concerned, as would a single heater extending throughout the entire length. The heaters 2, 3, and 4 are respectively supplied with energy from secondaries 5, 6, and 7 of a transformer, having a single primary winding 8 in circuit with a suitable generator 9. In Figs. 2 to 5, inclusive, the heaters 2, 3, and 4 are shown as tubular in form, the heater-wire being helically coiled around a tube of suitable insulating refractory material. The tubular heaters are also shown as arranged out of alinement with each other, and the heater 3 is also shown as located in a plane slightly above that of the heaters 2 and 4.

In Figs. 4 and 5 the heaters are arranged in the same manner as that just described, except that they are made to slightly overlap, thus insuring the application of the required degree of heat to the entire length of the glower.

I desire it to be understood that the heaters may be constructed and arranged differently from what is shown, that they may be supplied with current from any suitable source or sources, and that the number of heaters may be varied as desired. It is merely essential, so far as my invention is concerned, that different sections of the glower be heated by independent heaters in order to avoid danger of injury by reason of the high electromotive force which would be required in case the arrangement heretofore employed were adopted.

I claim as my invention—

1. In an electric lamp of the type described, a glower adapted for high voltages, in combination with a plurality of independent heaters respectively disposed adjacent to different portions of the glower, substantially as described.

2. In an electric lamp of the type described, a glower adapted for high voltages, in combination with a plurality of heaters having independent circuits and respectively disposed adjacent to different portions of the glower and out of alinement with each other, substantially as described.

3. In an electric lamp of the type described,



a glower adapted for high voltages, in combination with a series of heaters having independent circuits and respectively disposed adjacent to different portions of the glower,  
5 said heaters being arranged out of alinement and overlapping each other, substantially as described.

In testimony whereof I have hereunto subscribed my name this 5th day of December, 1899.

ALEXANDER J. WURTS.

Witnesses:

H. A. CROOKS,  
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