No. 621,567. Patented Mar. 21, 1899.

G. HIMMEL.

INCANDESCENT BURNER.

(Application filed Apr. 12, 1898.)

(No Model.)

Fig. 1.

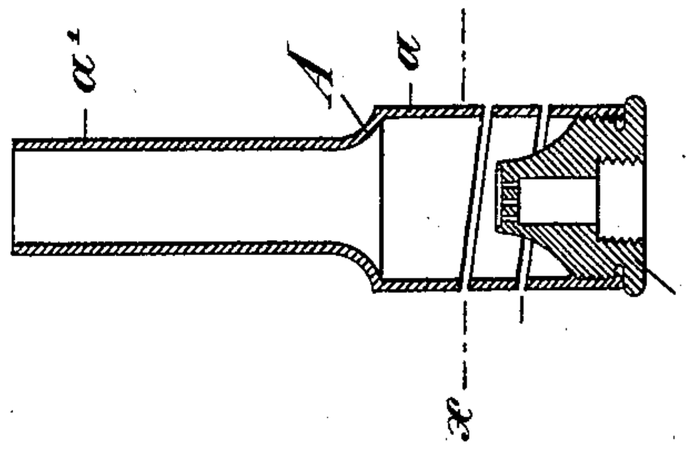


Fig. 2.

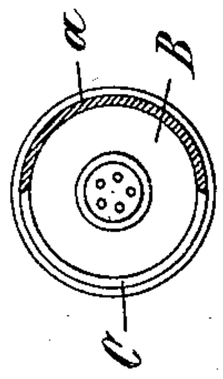


Fig. 3.

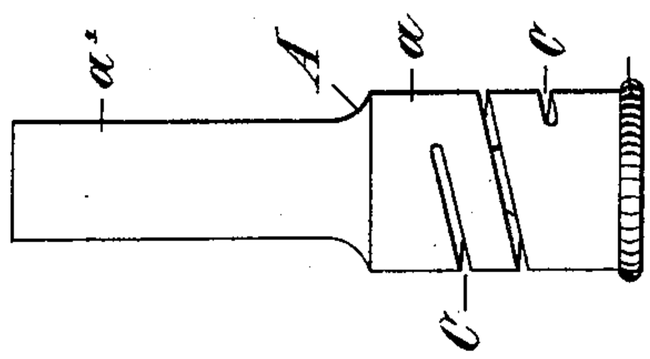


Fig. 4.

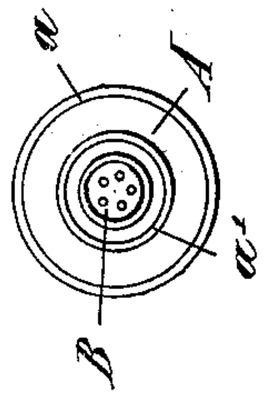


Fig. 9.

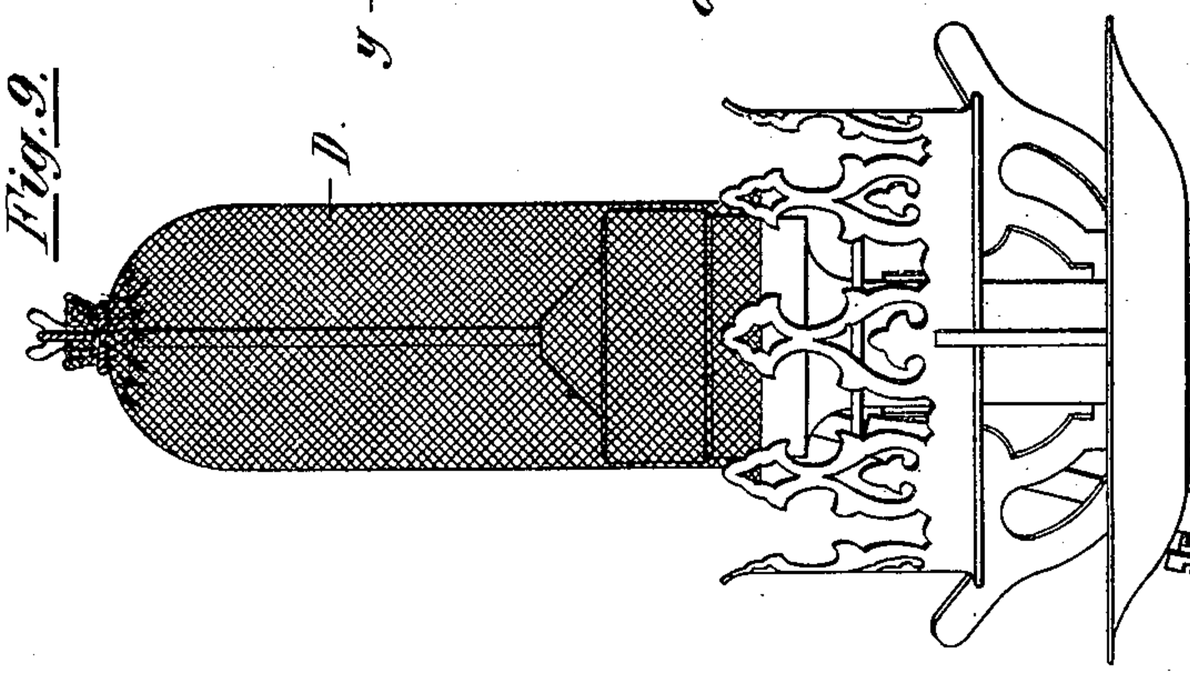


Fig. 5.

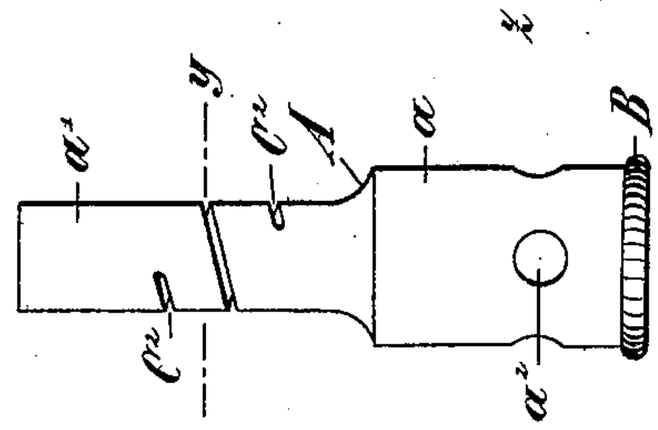


Fig. 6.

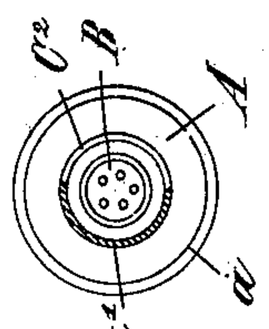


Fig. 7.

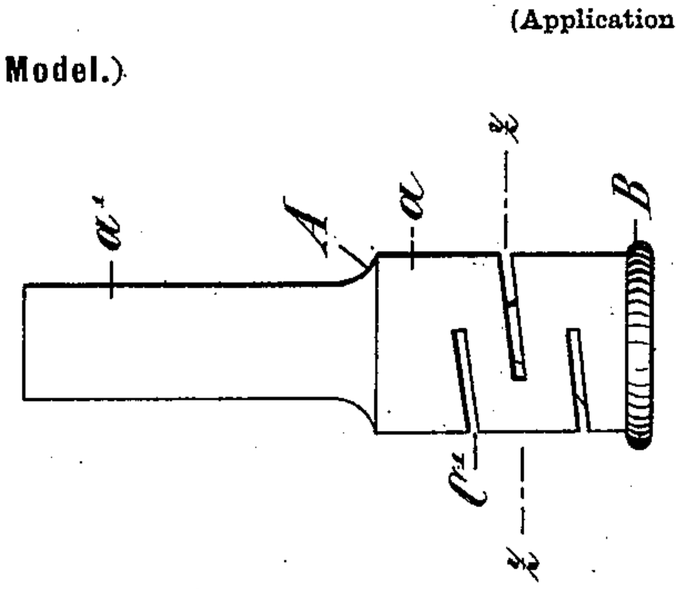
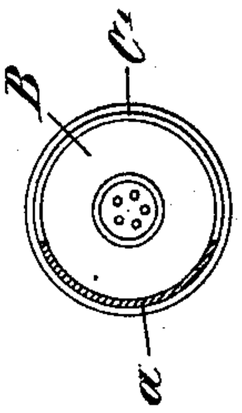


Fig. 8.



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UNITED STATES PATENT OFFICE.

GOTTLOB HIMMEL, OF TÜBINGEN, GERMANY.

INCANDESCENT BURNER.

SPECIFICATION forming part of Letters Patent No. 621,567, dated March 21, 1899.

Application filed April 12, 1898. Serial No. 677,367. (No model.)

To all whom it may concern:

Be it known that I, GOTTLOB HIMMEL, a citizen of the Empire of Germany, residing at Tübingen, in the Kingdom of Würtemberg, Germany, have invented a certain new and useful Improvement in Incandescent Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in incandescent burners.

The object of my invention is to provide a structure by means of which the mantle, which is very fragile, will be protected from sudden shocks, not only from lateral shocks, but also from those which may act in a vertical or substantially vertical direction.

My invention consists in suspending the upper part of the lamp, including the incandescent mantle and chimney, upon an integral resilient air-tube or burner-tube.

The invention will be more specifically described in connection with the accompanying drawings, in which—

Figure 1 is a longitudinal central section of a burner-tube embodying my invention; Fig. 2 a transverse section, Fig. 3 an elevation, and Fig. 4 a plan view, of the same. Fig. 5 is an elevation of a modified form of my invention; Fig. 6, a transverse section of the same; Fig. 7, an elevation of another modification of my invention; Fig. 8, a transverse section of the same, and Fig. 9 an elevation of a complete lamp embodying my invention.

In carrying out my invention I make the burner-tube A resilient at one part of its length, so that it is not only flexible laterally, but also compressible and extensible. This I accomplish by slotting the tube, as shown in the drawings. The most suitable manner of obtaining the desired result is to form a helical slot C in the lower part *a* of the tube A, the pitch of the helix being of any desired amount necessary to give a resilient action properly proportioned to the weight of the lamp. By this construction the burner-tube is fully resilient, and thereby prevents the direct transmission of shocks to the upper part of the burner-tube and lamp, so that no sudden jarring of the mantle can occur. It is to be observed, moreover, that the helical slot C, located in the lower part of the burner-tube, replaces the ordinary air-supply holes and has an additional advantageous action compared with such holes, since the helical slot produces a rotary action of the air, this resulting in a better and more rapid mixture of the air and gas in the part *a* of the burner-tube.

Instead of forming the slot in the lower part of the tube it may be made in the upper part *a'*, as shown in Figs. 5 and 6, in which case the upper part of the lamp, including the mantle and chimney, must be carried from the upper part of the said burner-tube. Furthermore, instead of making a helical slot in the tube I may cut straight slots alternately from the right and left of the tube, as shown at C', Figs. 7 and 8.

It will be observed that by my invention the mantle and its support will be protected from breakage due to sudden shocks in any direction owing to the fact that the burner-tube is resilient at one part.

I am aware that it is old to support the mantle in an elastic manner; but so far as I am aware no construction has been produced prior to my invention where the burner-tube made in one piece has a portion of its length rendered resilient, thus allowing the burner-tube itself to perform the function of a cushion for the mantle and doing away with the use of separate springs, whereby the desired result is attained in a very simple and efficient manner.

By my use of the term "burner-tube" I do not include a gas-pipe having a portion of its length coiled, but intend the said term "burner-tube" as designating a tube having the general purposes or functions of that shown in Fig. 1.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an incandescent lamp, the combination, with an incandescent mantle, of an integral burner-tube arranged to support the mantle and having one portion of its length resilient.

2. In an incandescent lamp, the combination, with an incandescent mantle, of a burner-

tube supporting the mantle and provided with a slot in one portion extending partly around the tube and arranged to form a resilient portion.

3. In an incandescent lamp, the combination, with an incandescent mantle, of a burner-tube arranged to support the same and provided at one portion with a helical slot.

4. In an incandescent lamp, the combination with an incandescent mantle, of a burner-tube arranged to support the mantle and provided with a slotted resilient portion at its lower end.

5. In an incandescent lamp, the combination, with an incandescent mantle, of a burner-tube arranged to support the same and provided with a helical slot at its lower end.

6. In an incandescent burner, the combination, with an incandescent mantle, of a slotted burner-tube arranged to support said mantle, said tube having its slots so located and proportioned as to produce the usual Bunsen effect, and at the same time to render the burner-tube resilient.

In testimony whereof I affix my signature in presence of two witnesses.

GOTTLOB HIMMEL.

Witnesses:
AUGUST DRAUTZ,
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