

No. 631,223.

Patented Aug. 15, 1899.

F. W. O. NICOLAI.  
PETROLEUM INCANDESCENT LAMP.

(Application filed Dec. 10, 1897.)

(No Model.)

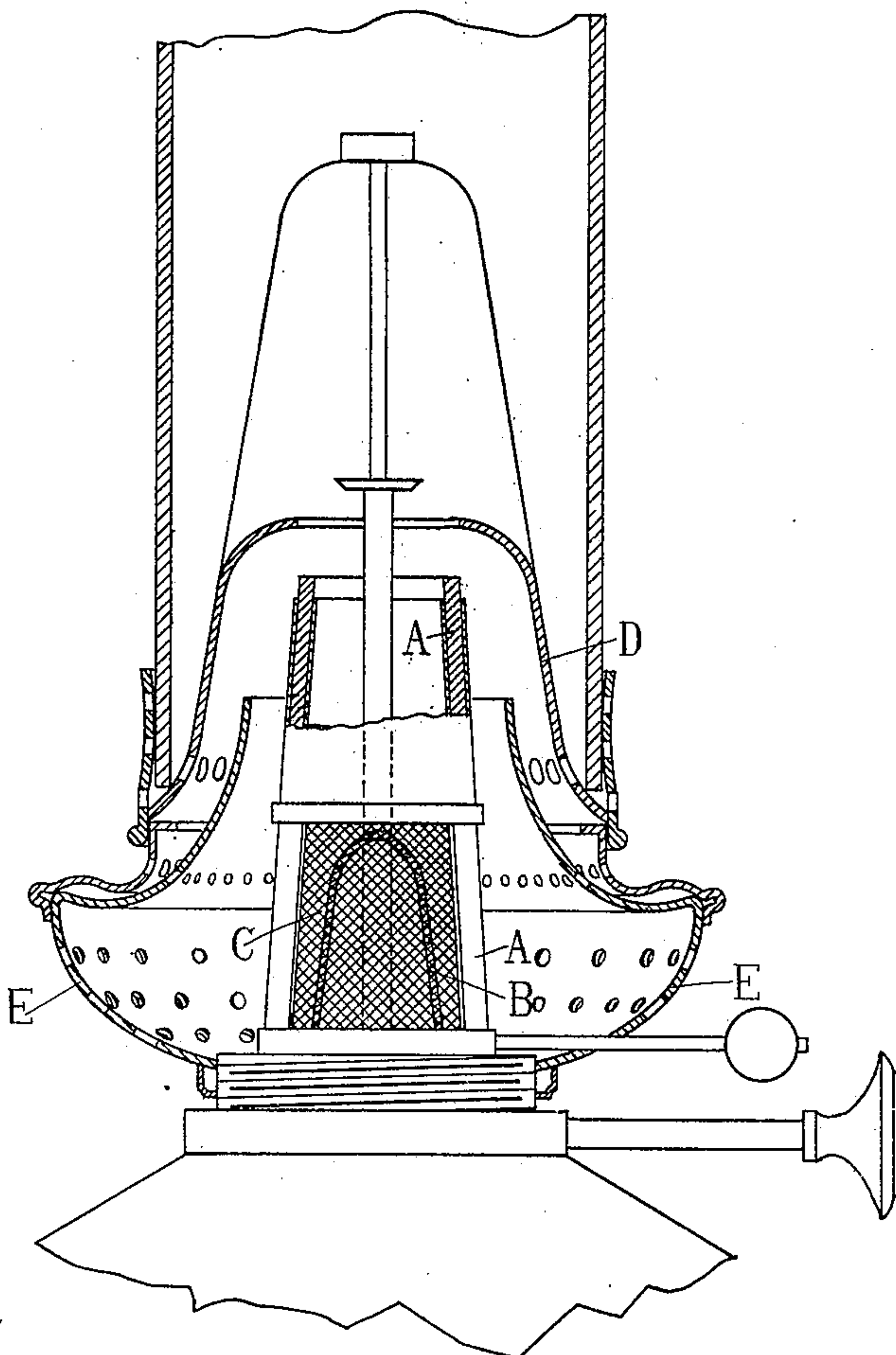


Fig. 2<sup>a</sup>

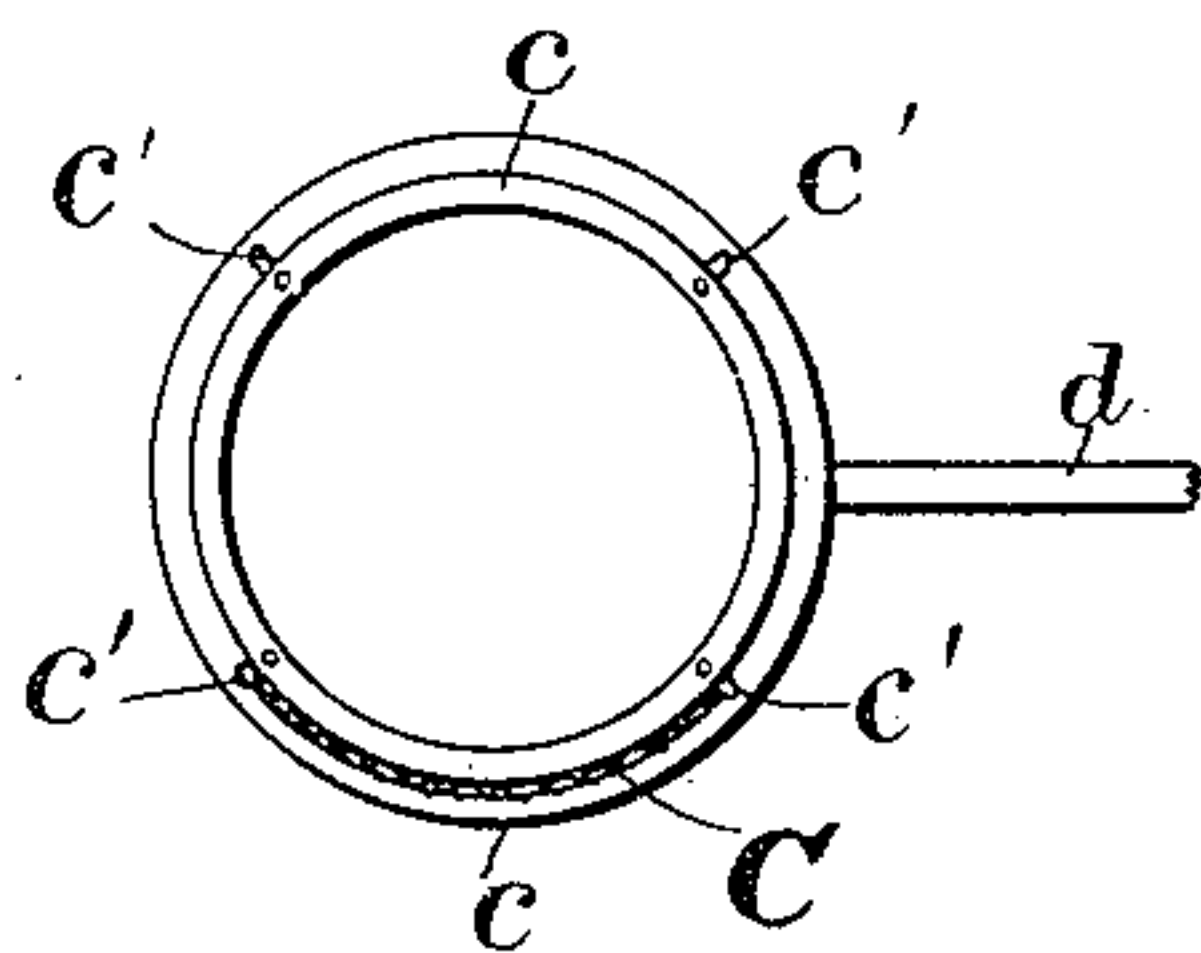
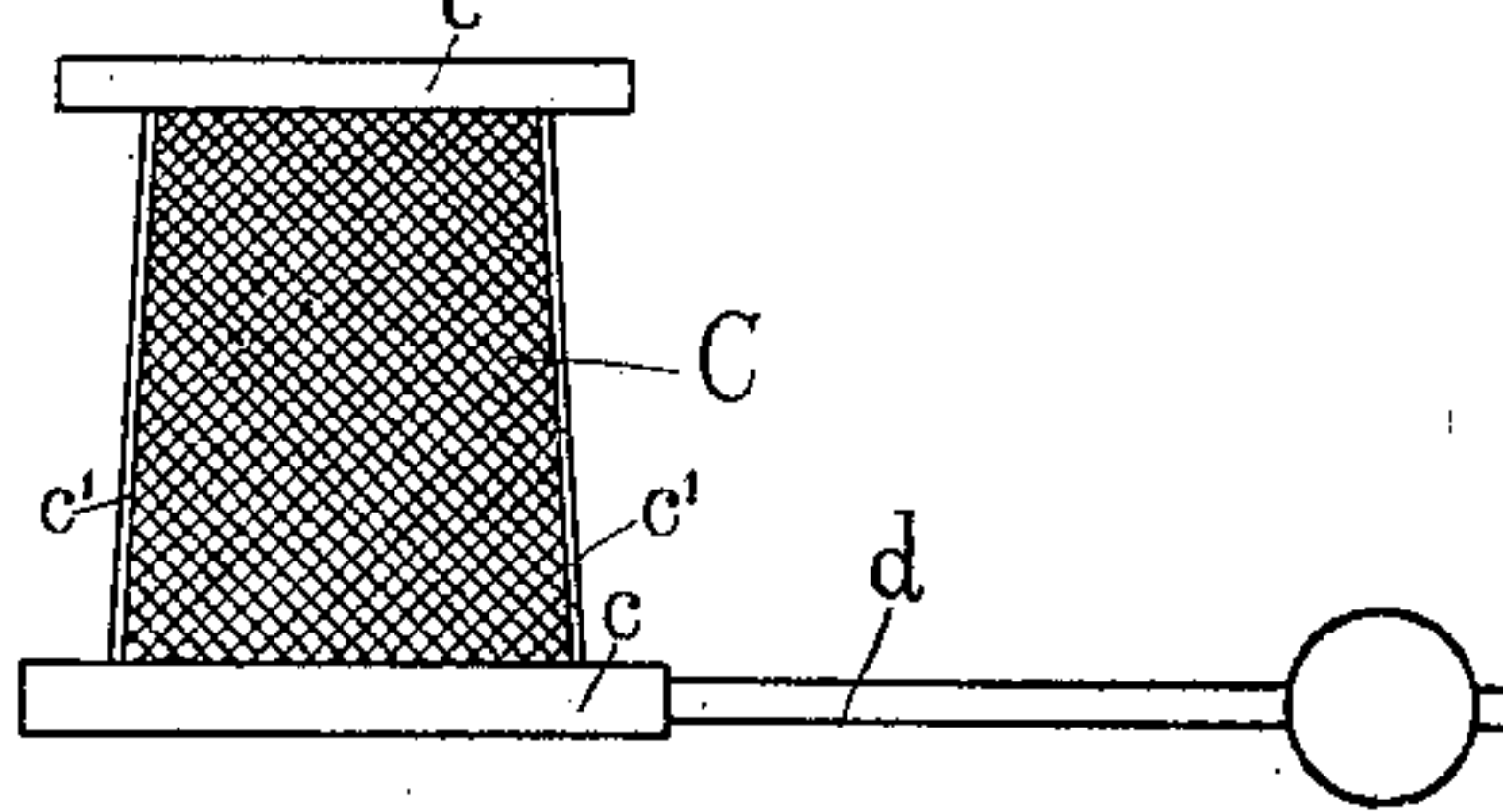


Fig. 1.

Fig. 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## PETROLEUM INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 631,223, dated August 15, 1899.

Application filed December 10, 1897. Serial No. 661,425. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH WILHELM OSCAR NICOLAI, a resident of Charlottenburg, Germany, have invented new and useful Improvements in Petroleum Incandescent Lamps, of which the following is a specification.

My invention relates to a hydrocarbon (in particular petroleum) incandescent lamp of that kind in which the petroleum is fed to the flame by means of a wick and is volatilized in such manner by the heat existing at the upper end of the wick-tube that on fitting on a dome or cap carrying an incandescent mantle the illuminating-flame is converted into a blue heating-flame. These lamps as heretofore usually constructed have the disadvantage that the fitting on of the dome could only be effected after the burner-disk and upper part of the wick-tube had been heated for about two minutes, if the blue flame produced was to be at once sufficiently hot to heat the mantle to incandescence. If, on the other hand, the dome was at once fitted on the lamp, it took about ten minutes before a useful light was obtained. In addition the conversion of the flame was by no means smoothly effected. It was frequently accompanied by the production of a bad odor, and sometimes it never took place at all, and if after the lamp was once sufficiently heated and burning in a normal manner the flame from any cause, such as a draft, was made to flash back to the illuminating-flame the lamp could never be brought back to the blue flame, but required first to be cooled down again. A further disadvantage consisted in that the regulation of the flame could only be effected by means of the adjustment of the height of the wick, which was subject to difficulties, because the said height of the wick had to be adjusted with the most minute accuracy. If the wick was too low, a bad combustion took place, and if it was raised ever so slightly a blackening of the mantle ensued. I have discovered that these disadvantages can be obviated by enabling the air-supply to the interior of the wick-tube to be regulated. If, namely, the air-supply to the interior of the wick be cut off before fitting on the dome,

not only are the said disadvantages obviated, but also immediately upon lighting the lamp, or rather immediately following the fitting on of the dome, a useful although not quite perfect light is obtained, which is developed in from one to two minutes afterward to the highest degree of brilliancy; but above all the conversion to the blue flame is effected in an instant and with certainty and there is no question of an accurate adjustment of the wick, an approximate adjustment being sufficient, while the accurate regulation of the lamp can then be easily effected by the regulation of the air-supply to the inner tube of the burner.

Referring to the accompanying drawings, in which similar letters of reference indicate the same parts in the several views, Figure 1 is a vertical sectional view through a lamp-burner embodying my improvements. Fig. 2 is a side elevation of the wire cover for the air-inlet. Fig. 2<sup>a</sup> is a plan view of the same.

My said invention will be readily understood on reference to Fig. 1 of the accompanying drawings. A is the wick-tube of ordinary construction, into the interior of which the air can penetrate through the triangular opening B. According to the present invention this triangular opening can be either partially or entirely closed by a slide C. This slide, which is shown separately at Fig. 2, consists, advantageously, of two rings c, fitted on the tube A, and which are connected together by small vertical bars c' and carry the closing-slide C. With the lower ring is combined a rod d, by means of which the slide C can be turned, so as to more or less cover the triangular opening B. In order to prevent the total closing and to obtain an effective distribution of the entering small quantity of air, the slide C is made of very fine wire-gauze.

When the lamp is to be lighted, the internal air-supply is almost entirely cut off, the wick is lighted, and the dome D is at once fitted on in the ordinary manner. The wick is then raised, whereupon a reliable conversion to the blue flame is effected without producing any objectionable smell.

It is of the greatest importance that imme-



diately after the wick has been lighted the dome can be fitted on. When the blue flame has been formed, the inlet B for the inner air-supply is opened by degrees, if necessary, 5 with simultaneous adjustment of the wick. Already with the fitting on of the dome the lamp affords a certain illuminating power which is nearly equal to that of an ordinary petroleum-lamp, and the illuminating power 10 goes on increasing and becomes after an exceedingly short space of time equal to that of an incandescent gas-lamp.

If the lamp is to be extinguished, the wick is simply screwed down into the wick-tube A 15 and the flame is blown out, as with ordinary lamps. Petroleum-vapors are not at all formed in this case. The lamp burns continuously to the last drop of the petroleum in the reservoir without requiring further regulation 20 and without noise. Furthermore, it is of importance that the lamp can without being left to cool be at once lighted again, as above described, the inner air-supply being first cut off.

25 It will be obvious that the openings in the burner-gallery E may be closed by any suitable means, if desirable.

Having now particularly described and ascertained the nature of my said invention and 30 in what manner the same is to be performed, I declare that what I claim is—

1. In a petroleum incandescent lamp, means

for regulating the draft, consisting of a stationary part provided with an opening and a movable part provided with wire-gauze 35 adapted to cover or uncover the opening, substantially as described.

2. In a petroleum incandescent lamp, means for regulating the draft, consisting of a stationary part provided with an opening in com- 40 bination with a movable part consisting of two parallel rings and wire-gauze extending from one ring to the other and fastened thereto, substantially as described.

3. In a petroleum incandescent lamp, the combination with a wick-tube having an open- 45 ing B, of a curved slide of fine wire-gauze, to cover the said opening, and means for turning the said slide to open or close the opening, substantially as described. 50

4. In a petroleum incandescent lamp, the combination with a wick-tube having an opening B, of a curved slide of fine wire-gauze to cover the said opening, a ring secured to the said slide, and a handle on the said ring; 55 substantially as described.

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

FRIEDRICH WILHELM OSCAR NICOLAI.

Witnesses:

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HENRY HASPER.