

(No Model.)

C. RICHTER & R. T. ESCHLER.
ELECTRIC ARC LAMP.

No. 573,161.

Patented Dec. 15, 1896.

Fig. 1.

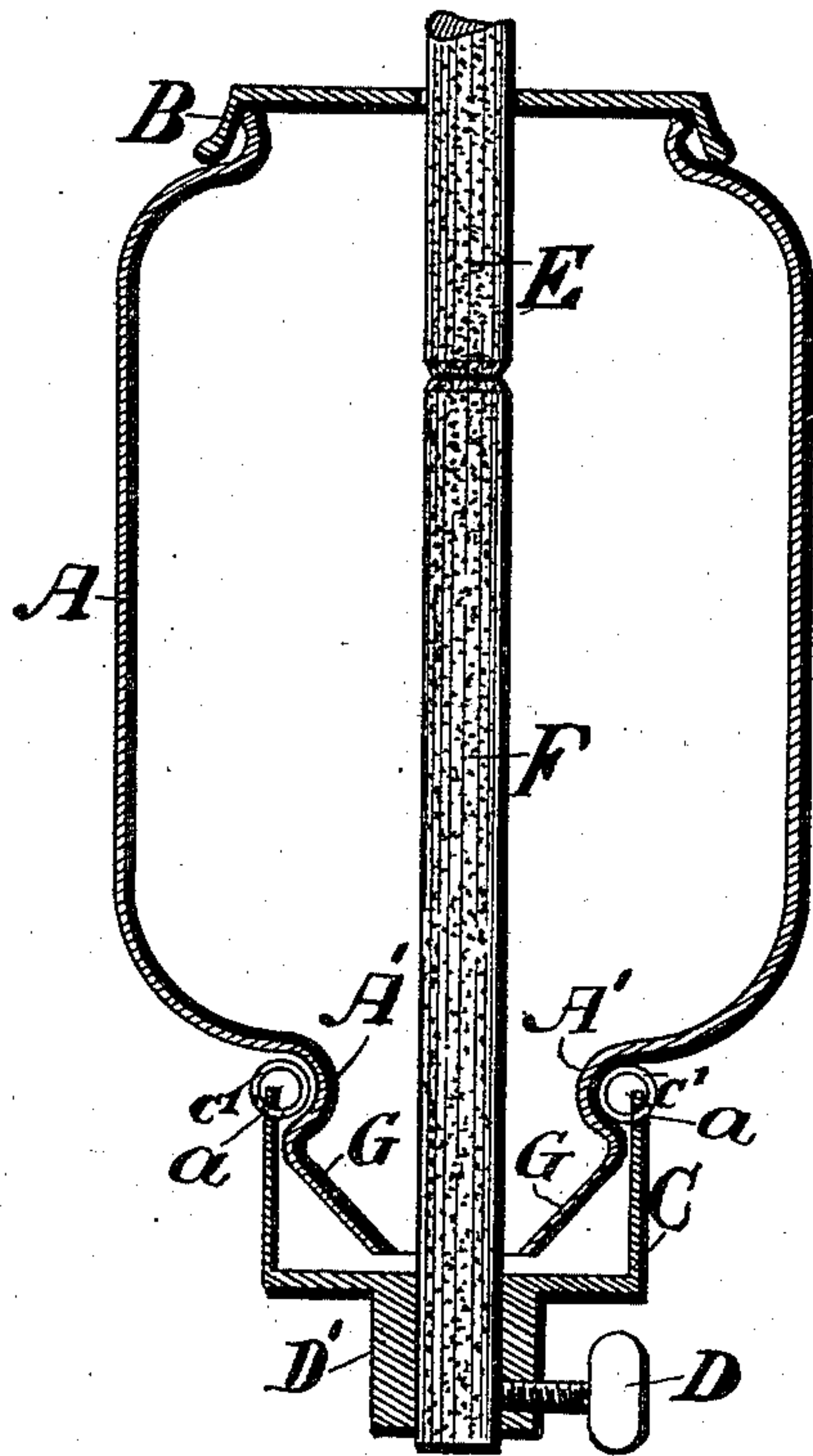


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES RICHTER AND RICHARD T. ESCHLER, OF CAMDEN, NEW JERSEY,
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ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 573,161, dated December 15, 1896.

Application filed March 26, 1896. Serial No. 585,020. (No model.)

To all whom it may concern:

Be it known that we, CHARLES RICHTER, a citizen of the United States, and RICHARD T. ESCHLER, a subject of the Emperor of Germany, residing in the city and county of Camden, State of New Jersey, have invented a new and useful Improvement in Electric-Arc Lamps, which improvement is fully set forth in the following specification and accompanying drawings.

Our invention relates to arc-lamps in which the arc burns within an inclosing chamber or cylinder, which is either transparent or translucent. As well known, this type of lamp requires about seventy-five volts tension across the arc to insure its steady burning. Employing such a high tension of course gives the arc a considerable length. For the same number of amperes the length of the arc burning in a chamber is about six to eight times as much as that burning in the open air. In some forms of lamps of this class heretofore known the access of air to the chamber is prevented by mechanical means. In other forms a small amount of air, producing always a current of uniform direction relatively to the arc, is admitted to the chamber, so that it is possible to burn the arc at a lower voltage, but the life of the carbons is materially reduced.

In lamps of the first-mentioned class a safety-valve has been provided in order to permit the escape of the hot gases of combustion. In such cases the valve will open only after a certain pressure has been attained. This pressure is not uniform, as it fluctuates, thus changing the resistance of the arc and affecting the steadiness of the light. On analyzing the gases of combustion in the chamber they will be found to be carbonic oxid (CO) and carbonic-acid gas (CO₂). If the specific gravity of air be 1.00000, that of carbonic oxid (CO) is 0.96744 and that of carbonic-acid gas (CO₂) is 1.51968. A mixture of these two gases will therefore be of greater specific gravity than air, and this affords a means of effectually preventing the access of oxygen to the chamber and at the same time providing an escape of the surplus gases in an even manner, always maintaining the same pressure within the chamber. It is essential

for the steady operation of the lamps to provide a continuous escape of the gases for reasons stated above.

The nature of our invention will be hereinafter more fully described, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical section of an electric-arc lamp embodying our invention. Fig. 2 represents a top view of a detached portion thereof on an enlarged scale.

Similar letters of reference indicate corresponding parts in the two figures.

Referring to the drawings, A designates a transparent or translucent chamber, which is provided with a cap B, through which latter the upper or positive carbon E passes and is fitted, practically closing the opening therein.

C designates a cylindrical or other shaped cup which holds or supports the chamber A, and is provided with the screw D for holding the lower or negative carbon F, which latter passes through the boss D' of the cup C, said screw being fitted to said boss. Secured to the top of the cup C is an elastic ring, consisting of a spiral spring C' of annular form, the same being seated in the neck A' on the lower portion of the chamber A and has its convolutions reeved through openings *a* in said cup C, said ring affording elastic support for the chamber A and holding it firmly in position and allowing it to yield to any lateral pressure, thus reducing the liability of breakage of the chamber to a minimum.

The lower portion of the chamber A is contracted, as at G, or of the form of an inverted cone, the bottom of which is open, and is located within the cup C, so that in assembling the parts the spring C' may slip readily over the conical portion G, and so reach the neck A', in which it is seated.

It will be seen that the gases of combustion have an unobstructed egress from the bottom of the chamber A through the cup C into the atmosphere, but as the said gases are of greater specific gravity than air they will act as a seal at the open bottom of the chamber, and thus prevent the entrance of air into said chamber, whereby the arc will burn within an atmosphere of CO and CO₂.

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. An electric-arc lamp, having a chamber with a cap for holding the positive carbon, 5 and a conical-shaped open lower end, a cup with means for holding the negative carbon, and a spring which is connected with said cup and supports said chamber, said spring embracing a neck on said chamber, and said 10 parts being combined substantially as described.

2. In an electric-arc lamp, a chamber having an open lower portion with a neck thereon, a cup inclosing said lower portion and a spring 15 embracing said neck and connected with said cup, said chamber resting on said spring, said parts being combined substantially as described.

3. In an electric-arc lamp, a cup, an arc-inclosing chamber, and a coiled spring, the latter being reeved in said cup, and engaging said chamber to yieldingly support the same, substantially as described.

4. In an electric-arc lamp, an arc-inclosing chamber practically closed at top, and formed 25 with a contracted lower end, the bottom of which is open, a support for the negative carbon, and a spring on said support engaging a neck or shoulder on said chamber for holding the latter, substantially as described.

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Witnesses:

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