

No. 756,460.

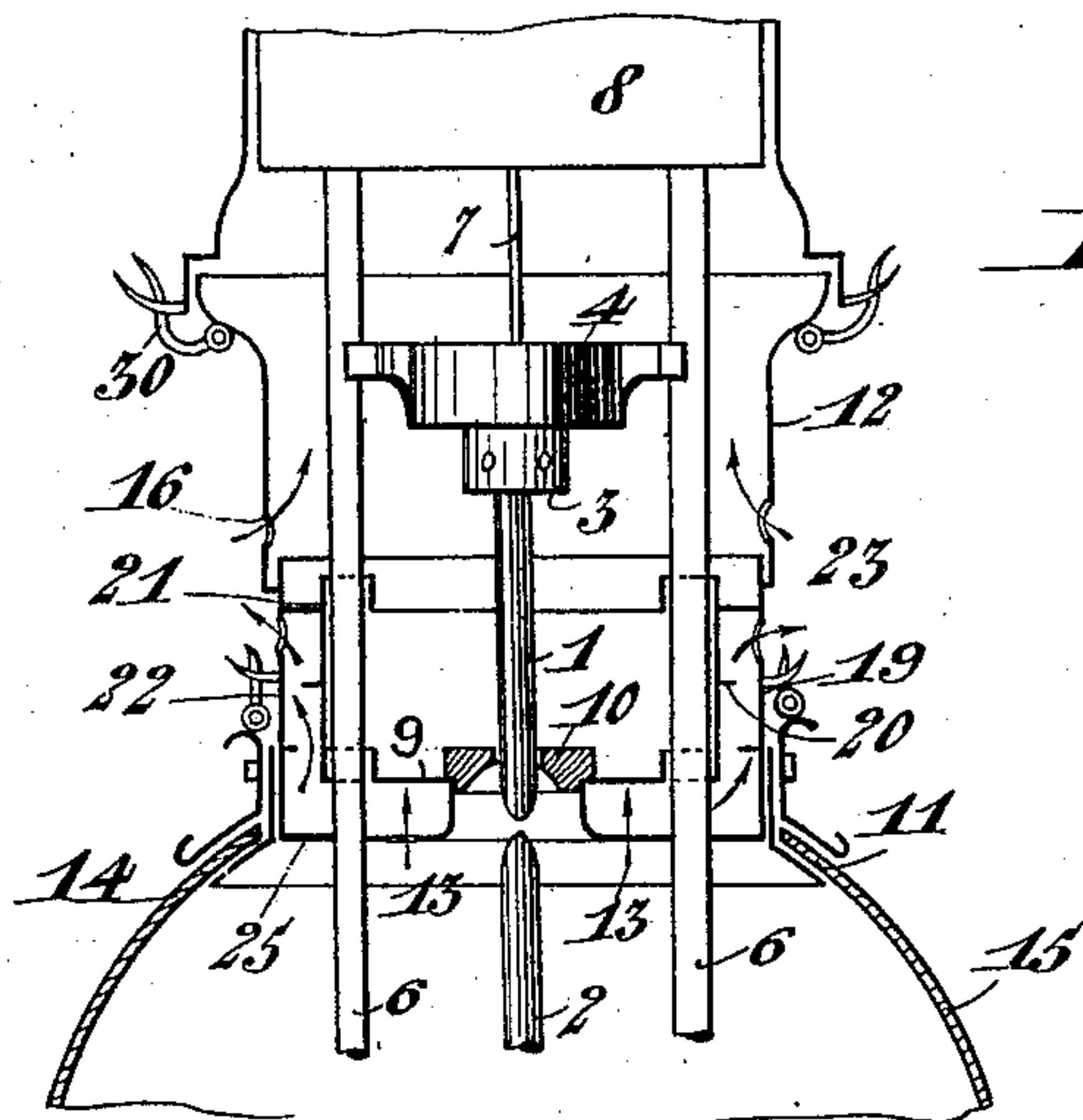
PATENTED APR. 5, 1904.

A. BLONDEL.  
ELECTRIC ARC LAMP.

APPLICATION FILED NOV. 10, 1902.

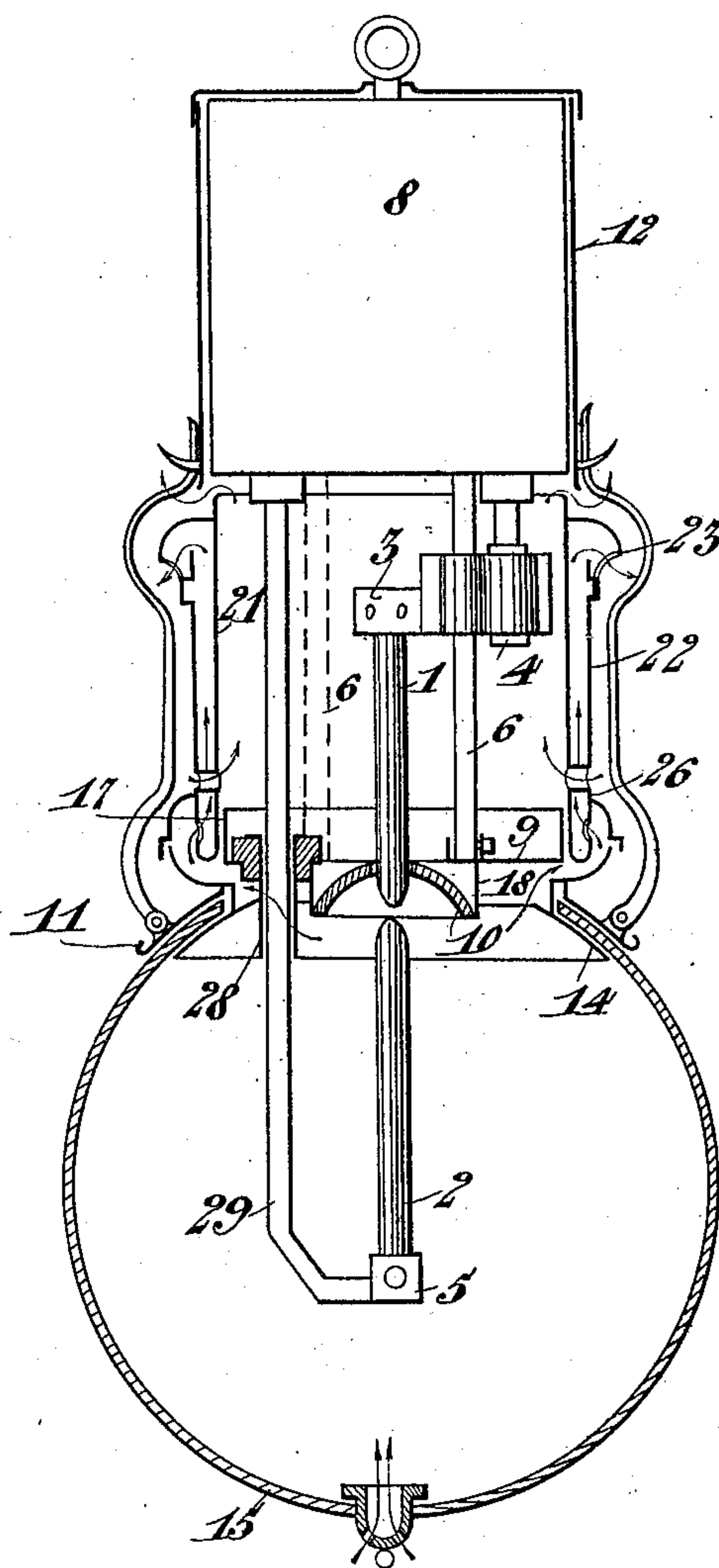
NO MODEL.

2 SHEETS—SHEET 1.

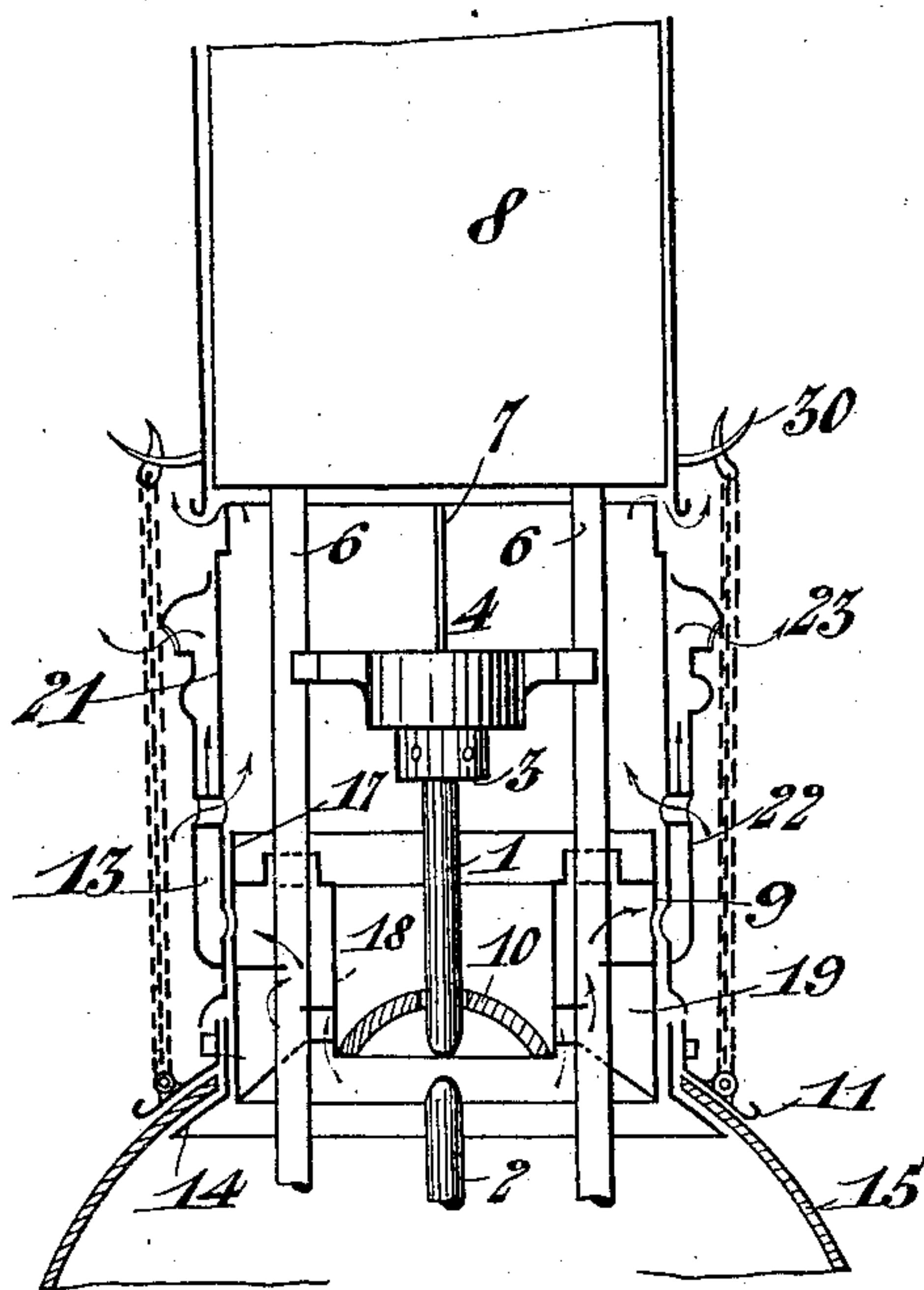


*Fig. 1.*

*Fig. 2.*



*Fig. 3.*



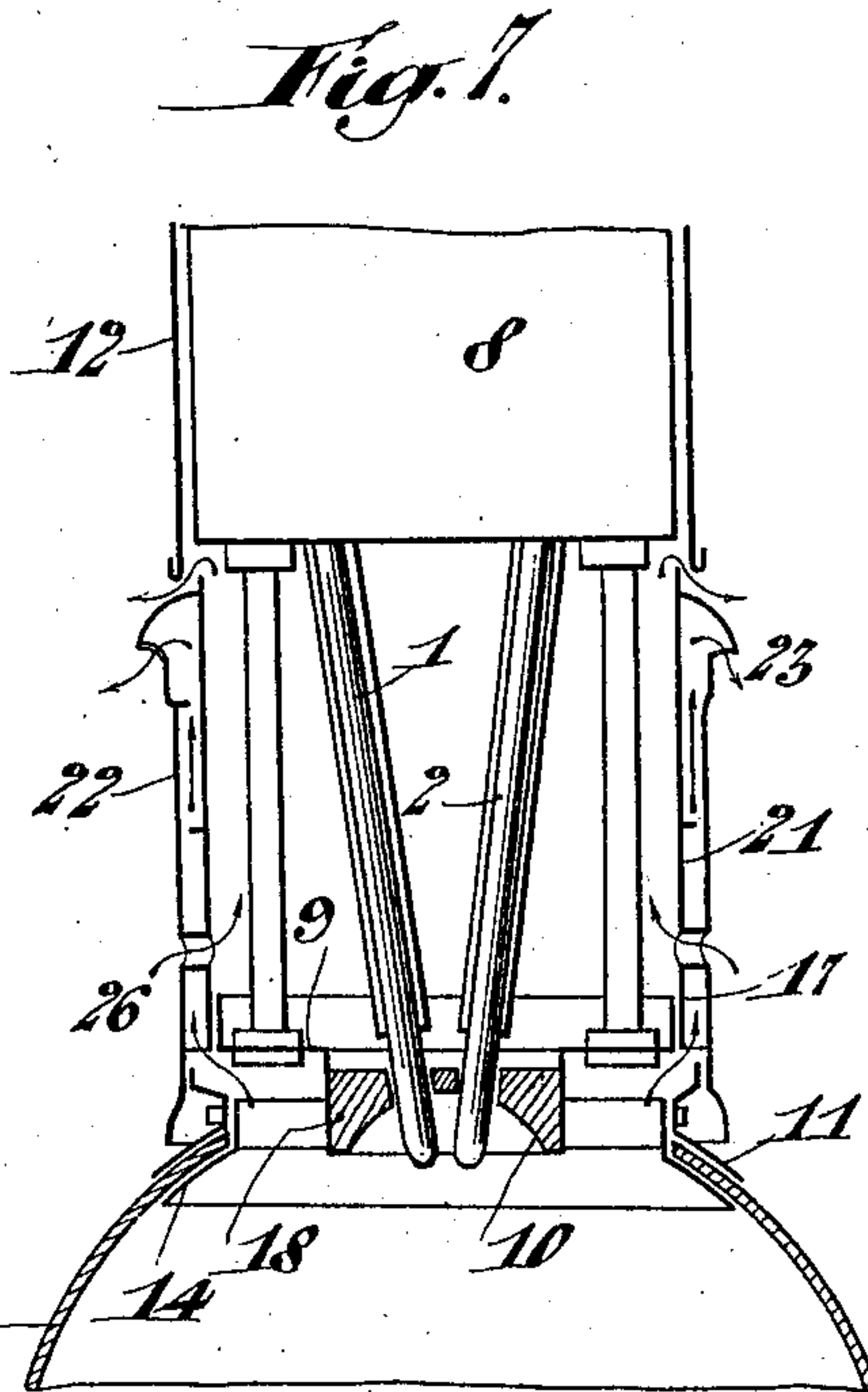
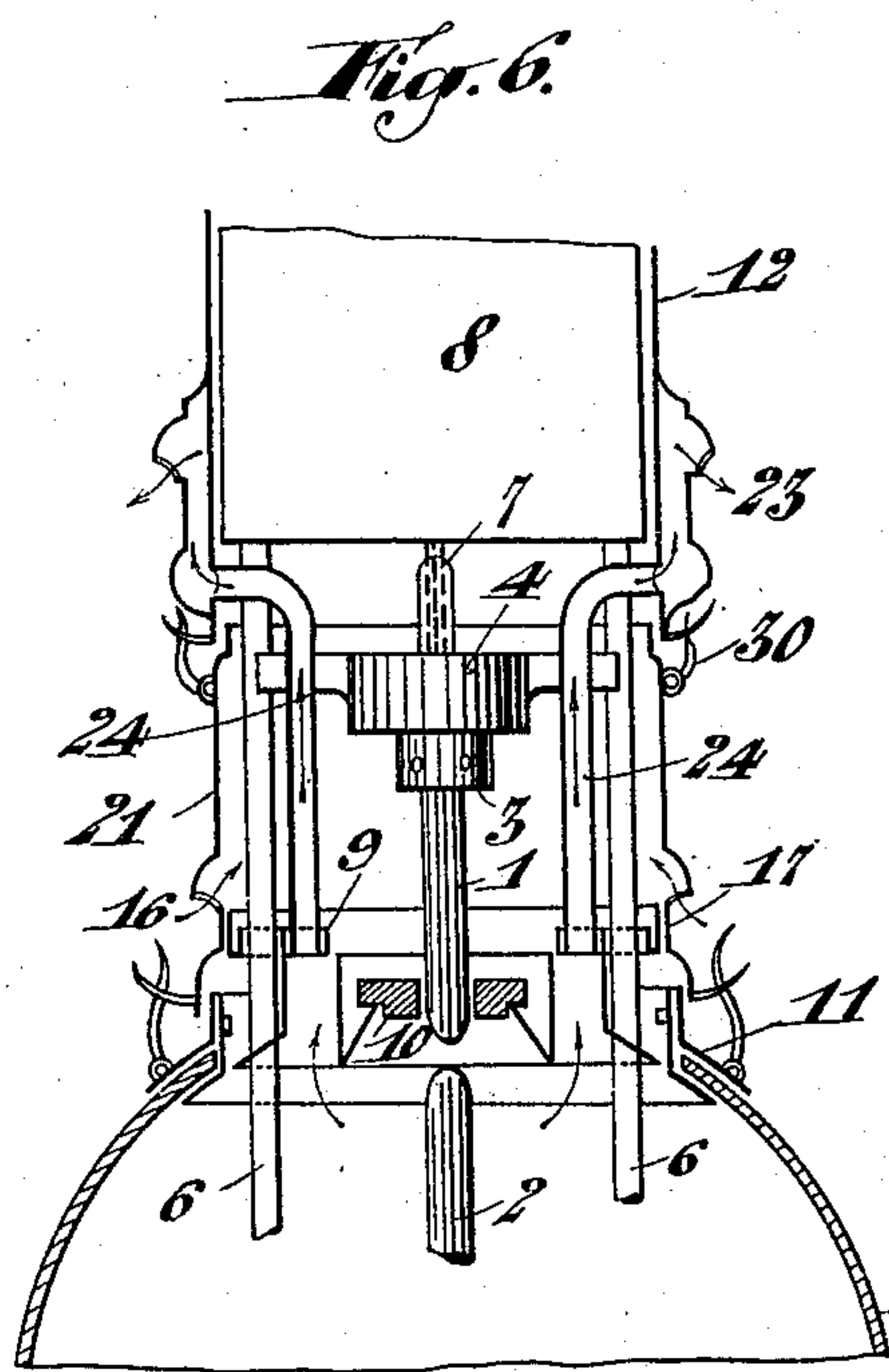
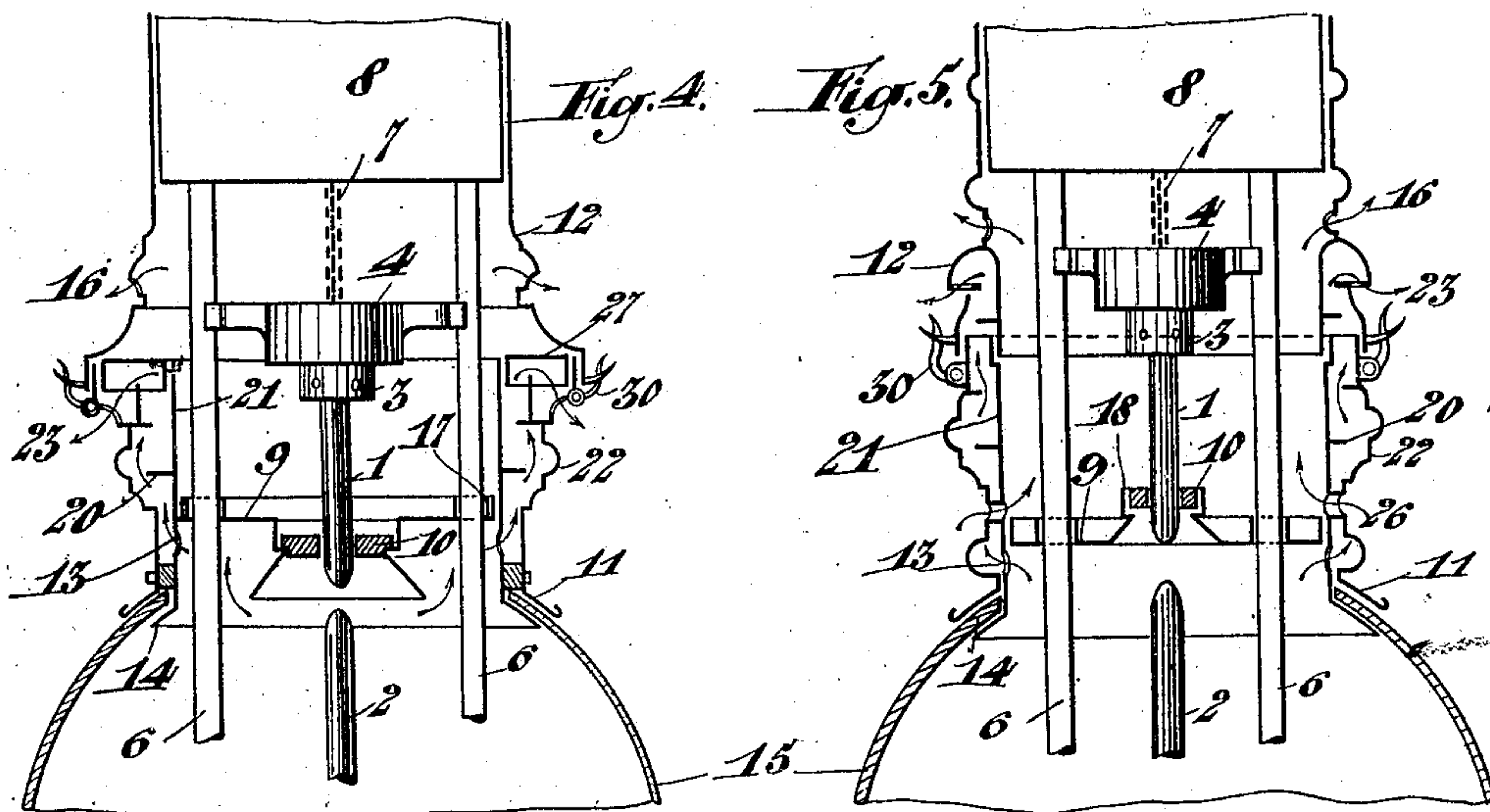
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NO MODEL.

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

ANDRÉ BLONDEL, OF PARIS, FRANCE.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 756,460, dated April 5, 1904.

Application filed November 10, 1902. Serial No. 130,794. (No model.)

*To all whom it may concern:*

Be it known that I, ANDRÉ BLONDEL, engineer, a citizen of the French Republic, residing at Paris, France, have invented new and useful Improvements in or Relating to Electric-Arc Lamps with Mineralized Electrodes; and I do hereby declare the following to be a full, clear, and exact description of the same.

My said invention relates to arc-lamps embodying mineralized electrodes and a protecting-casing; and the object of the invention is to provide an improved construction capable of allowing the escape of the fumes produced by mineralized electrodes without access to the mechanism and the introduction of fresh air into the mechanism and giving easy access for the introduction of the carbon and to generally improve the various parts.

In the drawings, Figure 1 shows a fixed double envelop 21 22, which incases the part of the lamp above the horizontal partition 9 and which is traversed by the vapors coming from the lower openings 13 and flowing to the upper outlets 23. Fig. 2 shows a movable double casing which can be separated from the partition 9, upon which it is mounted. Fig. 3 shows a combination of the two above-described constructions wherein the double casing 21 22 is mounted upon a fixed condensation-chamber 18 19, with the openings 13 opposite to one another. Fig. 4 is a modification of Fig. 2, in which the double casing 21 22 covers only a part of the height of the lamp. Fig. 5 is another modification in which the double casing consists of two parts incasing one another. Fig. 6 shows a further construction wherein the double casing is arranged still higher and receives the vapors through tubes 24 of any desirable number, the lower ends of which extend through the partition 9 and the upper ends of which terminate in the double casing 21 22. Finally, Fig. 7 shows the application of the same arrangement to lamps with the carbons placed side by side, so as to inclose the space containing the carbons and also the mechanism, a double casing 21 22, adapted for the removal

of the vapors, being shown independent or connected to the globe or to the base. In these figures the numerals indicate the various parts as follows:

- 1 and 2 are the carbons.
- 3 is the upper-carbon holder. 4 is the counterweight accompanying it.
- 5 is the lower-carbon holder.
- 6 represents the guide-rods, of any desired number, one of these being hollow for the introduction of the chain, string, or rod which supports the lower-carbon holder.
- 7 is the rod, cord, or chain supporting the upper-carbon holder.
- 8 is the closed box containing the usual mechanism.
- 9 is the horizontal partition, which is flat, conical, or curved and consists of refractory material or plain or enameled metal and which completely separates the upper-carbon holder from the zone of the arc in such a manner that no vapors coming from the latter can ascend above the carbon-holder 3 nor reach the mechanism 8. 10 is the economizer supported by this partition 9 or directly attached to the rods 6.
- 11 is the metal crown fixed above the opening of the globe.
- 12 is a simple casing surrounding the space containing the upper-carbon holder.
- 13 represents the outlet-openings for the fumes contained in the globes.
- 14 is an internal collar on the globe (fixed to the latter or to the partition 9 or to the rods) and serving eventually as a reflector, being enameled or not, as in the case of the partition 9 and the economizer 10.
- 15 is the globe.
- 16 represents openings for the circulation of the air in the casing 12.
- 17 is a vertical cylindrical flange of the partition 9, against which the casing is tightly adjusted.
- 18 is a tubular socket arranged in the partition 9 and carrying the economizer 10.
- 19 is the fixed condensation-chamber mounted upon the partition 9.
- 20 represents offsets or partitions for cool-



ing and condensing the vapors; 21 22, concentric walls forming the double casing or cover between which the fumes escape through the openings 23; 24, outlet-tubes, which up to a  
5 certain height can replace the double casing.

25 is the supplementary partition arranged parallel to the partition 9, so as to form the condensation-chamber.

26 represents tubular openings arranged  
10 across the walls 21 22 of the double casing and having the object of allowing fresh air to penetrate into the lamp without mixing with the fumes.

27, Fig. 4, is a movable annular cover, which  
15 can be lifted off the double casing, so as to facilitate the cleaning.

28 is a guide-socket in lamps with movable rods 29, Fig. 2, and arranged beneath the partition around the movable rod in order to protect it from the fumes which settle down upon  
20 the socket.

30 indicates the means of attachment—such as bolts, rods, or chains—arranged to connect the various parts of the lamp, globe, casings,  
25 base, &c.

As can be seen from the figures, the invention is characterized by the combination with a horizontal partition generally provided with a large economizer of a casing with double  
30 walls 21 22, which are connected together and leave between them a passage for the fumes entering from below and escaping above. These double casings can have a height greater or less with regard to the lamp, and they can be  
35 made of one or several parts combined or not with fixed condensation-chambers or simple casings. The double casings can be fixed, Fig. 1, or independent, Fig. 2, and they can be held on the base or the globe with the aid  
40 of any means of attachment. They can also be connected once for all to the base, Fig. 6, or more conveniently to the globe, Figs. 4 and 5. They fit tightly round the partition 9 either by simple jamming or with the aid  
45 of a flexible packing of metal, asbestos, or the like, as used for the joints of any machinery. Their height is sufficient for the production of a draft of gas, and the fresh air can penetrate into the globe through the ash-receiver  
50 or through the openings in the crown 11. The openings for the admission of fresh air into the lamp allow of cooling the internal walls of the double casings, and the vapors which traverse these casings between two cold walls  
55 are more completely condensed than in any other apparatus. In order to increase the condensation, projections or partitions 20 can be arranged in the casings in the path of the gases, thereby forcing the latter to pass over  
60 them, while metallic screens or filters of asbestos, felt, or the like can also be used without hindering the discharge of the vapors, as a very powerful draft is obtained. Owing to this draft, the gases do not tend to ascend into

the lamp through the joint between the partition 9 and the casing 22; but this joint can  
65 be dispensed with, according to the arrangements shown in Figs. 1 and 6. In the latter the simple casings 12 can, if desired, be dispensed with and the space around the upper  
70 carbon can be kept open, thus insuring an excellent condensation of the fumes.

Besides the double casings the present invention contains other novel features relating to the arrangements of protectors and economizers. Fig. 2 shows the arrangement of a  
75 protecting-socket 28. Whenever a lamp has movable rods, they can be arranged so as to traverse the partition 9 with a slight friction through a tight opening provided with packing, which can be of insulating material—such  
80 as asbestos, mica, and the like; but this is not sufficient, as in proximity with the economizer the movable rod 29 becomes covered with fumes, which prevent it from smoothly  
85 sliding in the opening in the partition. For this reason these rods are at a certain height—for instance, two or three centimeters below the edge of the economizer—surrounded by a sleeve of any suitable material, which can be  
90 insulating or electrically insulated from the partition or from the rod. Thus the latter remains clean, and all the fumes can settle only on the protecting-sleeve.

As regards the partition of the economizer  
95 the novel point of the construction is that a circular opening is arranged at the center of the partition surrounded by a tube 18, which generally forms an integral part of the latter and which incases the economizer 10, which  
100 has the form of a disk or a dome or the like. Figs. 2, 3, and 7 indicate the simplest arrangement of this central tube, with a simple lower flange for the support of the cap 10. In Fig.  
105 4 the tube is extended to form a conical reflector. In Fig. 6 this reflector is formed by a part of the tube, which is suitably bent. In Fig. 5 the tube 18 is bent at the top and not at the bottom and receives the economizer at its upper end. This cap or economizer consists of any suitable fire-resisting material.  
110 All these constructions can be used for lamps with metallic-coated carbons placed side by side, (one or both carbons being metallic coated,) as well as for those with the carbons placed  
115 one above the other. In each case, however, they offer the same advantages—viz., strong draft, rapid discharge of the fumes, and very perfect condensation of the latter, preservation of the mechanism, a simple and economical  
120 construction, a thorough ventilation in the interior of the lamp, and an easy detachment of the casings. In order to internally clean the latter, they can be made of several parts, detachable by the removal of screws  
125 or the like, or a detachable cover 27 can be constructed, as shown, for example, in Fig. 4. It is also sufficient to shake the casings from



time to time, so as to cause the deposited mineral matters to fall out through the openings 13 23.

I claim—

5 1. In arc-lamps the combination with a horizontal partition, of a double-walled vertical annular casing through which the vapors are drawn by natural draft, and in which they condense before their escape from the lamp, 10 suitable openings being provided for the ventilation of the interior of the lamp and the cooling of the inner wall of the annular casing substantially as described.

2. In combination in an arc-lamp with a hori-

zontal partition above the arc a double-walled 15 annular casing through which the vapors generated are forced to pass before escaping from the lamp, perforations in the lower and upper parts of said casing for said vapors, and tubular lateral passages through the wall of the casing 20 to admit fresh air, substantially as described.

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

ANDRÉ BLONDEL.

Witnesses:

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EDWARD P. MACLEAN.