

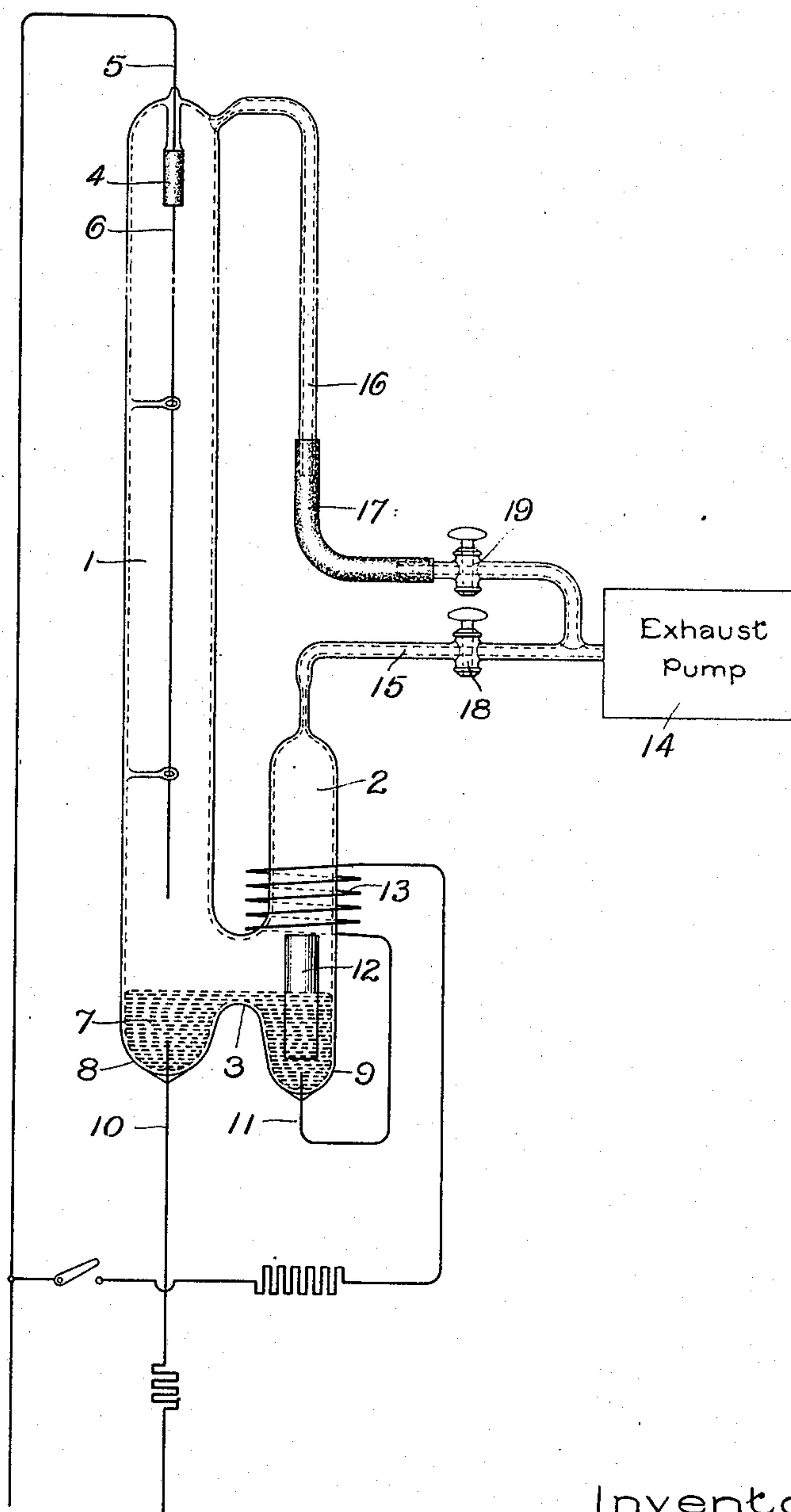
No. 881,588.

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A. McL. JACKSON.

METHOD OF EXHAUSTING VAPOR CONDUCTORS.

APPLICATION FILED AUG. 4, 1903.



Witnesses:

George Thornton
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Inventor:

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UNITED STATES PATENT OFFICE.

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METHOD OF EXHAUSTING VAPOR-CONDUCTORS.

No. 881,588.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed August 4, 1903. Serial No. 168,158.

To all whom it may concern:

Be it known that I, ALEXANDER McL. JACKSON, a subject of the King of Great Britain, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Methods of Exhausting Vapor-Conductors, of which the following is a specification.

My invention relates to a method of exhausting receptacles of that type in which, when exhausted, current is conveyed through the medium of a conducting vapor.

My invention may be applied to vapor conductors in the form of rectifiers, lamps, interrupters or the like and is more particularly applicable to that type of vapor conductor in which the envelop or receptacle is provided with a condensing chamber, either tubular or bulbous, located out of the path of the arc stream traversed by the current, but communicating therewith.

I have found that if a vapor conductor having a condensing chamber arranged as above mentioned be exhausted through a tube communicating with the main envelop at a point near the arc stream or its extremities, that after the exhaustion has proceeded as far as possible with the arc stream in operation, gas will continue to be given off after the arc stream is discontinued. This gas apparently comes from the condensing chamber and, while the arc is in existence, is apparently retained therein by a superior pressure in the envelop immediately inclosing the arc.

I have found that the complete exhaustion of the envelop may be greatly expedited by exhausting from the condensing chamber and especially from a point therein distant from the point or region of communication between the condensing chamber and the arc stream. By exhausting in this manner I find that no gas is given off after the arc in the main envelop is stopped.

The drawings illustrate the method of exhaustion above described and show this method as applied to the exhaustion of a mercury vapor lamp. The drawings, however, are intended to serve merely as illustrations, since it will readily be understood that the method is applicable in numerous other relations than the one shown.

In the drawings a mercury vapor lamp of a

well-known type, as shown for example in British Patent No. 8717 of 1902 is indicated. This lamp consists of a main tube 1 in which the main arc or current flow takes place, and a communicating supplemental tube or condensing chamber 2 joined therewith by connecting walls 3. In the upper end of the tube 1 an electrode 4, of artificial graphite titanium carbide or other suitable material is held in place by and electrically connected to the depending leading-in conductor 5. A carbon filament 6 depends from this electrode and extends downward to within a short distance of a body of mercury 7. This body of mercury is contained within the cups 8 and 9 formed respectively at the lower ends of the tubes 1 and 2, and is of sufficient quantity to bridge over the wall 3 between these cups.

Leading-in conductors 10 and 11 serve to make electrical connections with the mercury in the two cups. A float 12 consisting of a glass tube filled with iron serves, when acted upon by a solenoid 13 located about the tube 2, to separate the body of mercury across the bridge 3. This separation causes a starting arc to spring which has the effect of starting the arc in the main tube 1. The construction of the lamp, not being of my invention, requires no further description.

During exhaustion of the lamp, the exhaust pump 14 is connected as shown through a tube 15 extending from the top of the condenser chamber 2. When exhausted in this manner instead of solely from the top of the tube 1, as has heretofore been customary, the stopping of the arc in the main tube 1, after the exhaustion has apparently been carried as far as possible, is not followed by a further giving off of gas as would be the case if the exhaustion were carried out entirely from the top of the tube 1. The time spent in exhausting the envelop is thus very much less than is required if the exhaustion be carried out entirely from the top of the tube 1.

In addition to exhausting the envelop from the top of the condensing chamber, I may, if desired, in order to still further shorten the exhausting operation, conduct the exhaustion also from the top of the main tube 1. In this case the additional exhaust tube 16, with the flexible connection 17, may be provided. This exhaust tube hastens the withdrawal of the gases given off by the anode 4.

Stop cocks 18 and 19 serve to open and close the tubes 15 and 16 so that either may be used separately or both together.

When the exhaustion is completed the tube or tubes through which the exhaustion is conducted are sealed off as usual.

What I claim as new and desire to secure by Letters Patent of the United States, is,

1. The method of exhausting a vapor electric apparatus having an envelop or receptacle provided with a condensing chamber and with a main operating chamber traversed by the arc stream, which consists in conducting the exhaustion both from the condensing chamber and from the main operating chamber or portion traversed by the arc stream, and maintaining the arc or normal discharge during the operation of exhaustion.

2. The method of exhausting a vapor electric apparatus having an envelop or receptacle provided with communicating chambers each containing an electrode, which consists in conducting the exhaustion simultaneously from points communicating with the envelop or receptacle in the one case near one

electrode and in the other case near another electrode, and maintaining an arc in the envelop while the exhaustion is proceeding.

3. The method of exhausting a vapor electric apparatus having a receptacle or container consisting of a main body portion and a cooperating portion serving as a condensing chamber and communicating with the main body portion, which consists in conducting the exhaustion both from the condensing chamber and from the main body of the receptacle, and at the same time maintaining an arc or discharge in the apparatus.

4. The method of exhausting a vapor electric apparatus consisting of a receptacle or container provided with communicating chambers, which consists in conducting the exhaustion from said chambers simultaneously and, while the exhaustion is proceeding, maintaining an arc in said receptacle.

In witness whereof, I have hereunto set my hand this first day of August, 1903.

ALEXANDER MCLEOD JACKSON.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.