

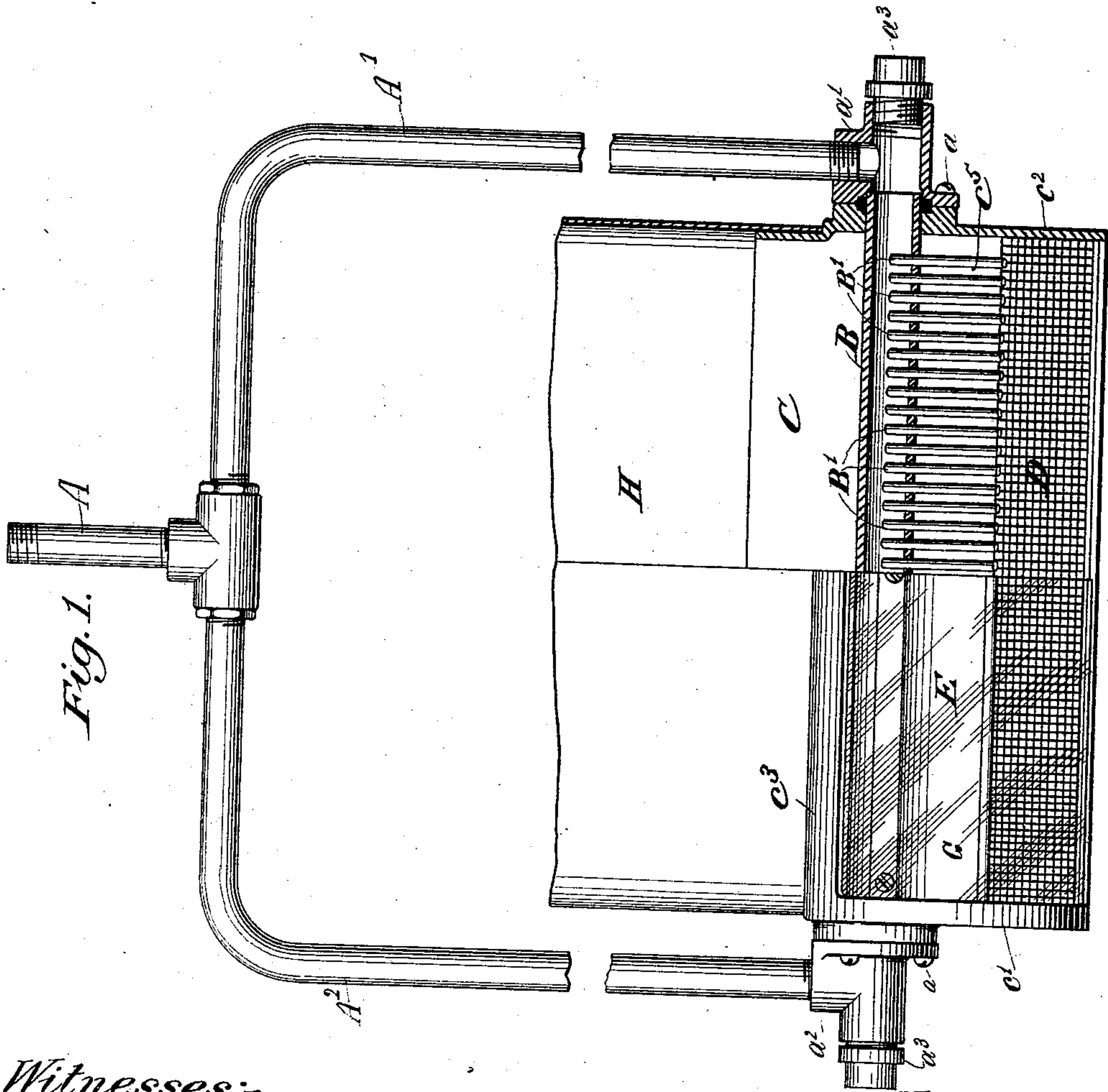
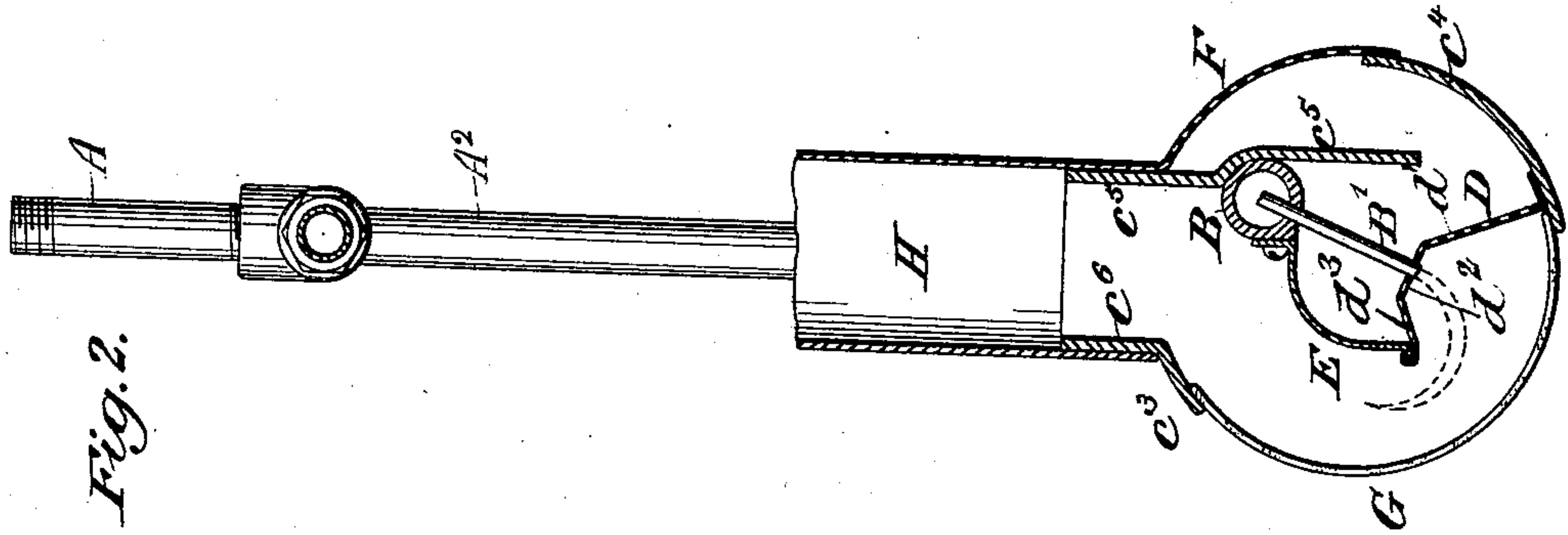
(No Model.)

W. J. SMART.
LAMP.

2 Sheets—Sheet 1.

No. 542,286.

Patented July 9, 1895.



Witnesses:-
R. H. Haywood
William M. Cluff

Inventor:-
Walter J. Smart.
By his attorney.
Edwin H. Brown.

(No Model.)

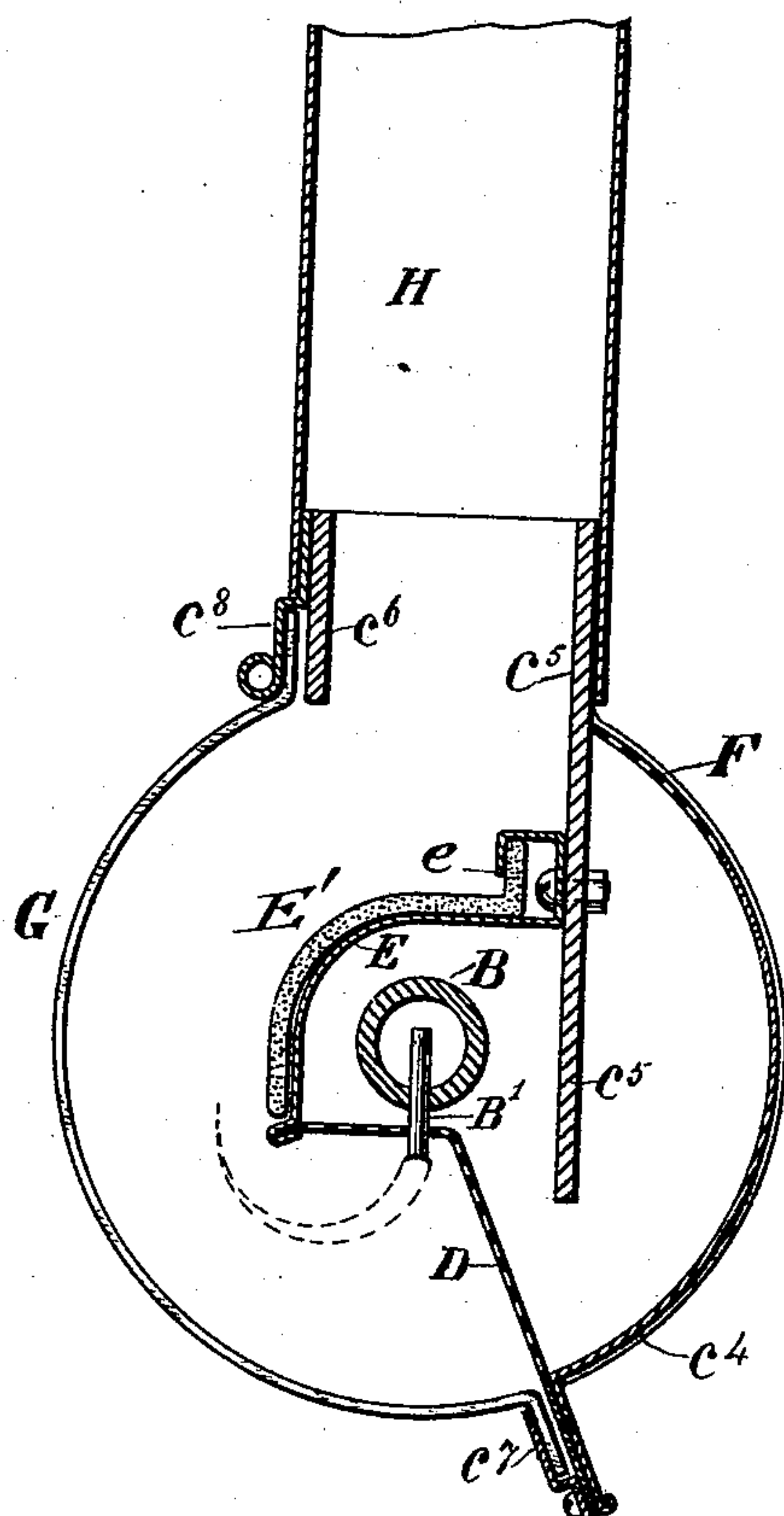
W. J. SMART.
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2 Sheets—Sheet 2.

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Fig. 3.



Witnesses:-
O. H. Haywood
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Inventor:-
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By his attorney.
Edwin H. Brown.

UNITED STATES PATENT OFFICE.

WALTER J. SMART, OF BROOKLYN, NEW YORK.

LAMP.

SPECIFICATION forming part of Letters Patent No. 542,286, dated July 9, 1895.

Application filed June 20, 1893. Serial No. 478,298. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. SMART, of Brooklyn, Kings county, in the State of New York, have invented a new and useful Improvement in Lamps, of which the following is a specification.

My improvement relates particularly to lamps of the regenerative type.

I will describe a lamp embodying my improvement, and then point out the novel features in a claim.

In the accompanying drawings, Figure 1 is a sectional front view of a lamp embodying my improvement. Fig. 2 is a transverse vertical section. Fig. 3 is a transverse section of a lamp of modified form embodying my improvement.

Similar letters of reference designate corresponding parts in all the figures.

In Figs. 1 and 2, A designates a gas-supply pipe, which may lead from any suitable source of supply. A' A² designate branch pipes extending therefrom. As here shown, the branch pipes are connected with the main pipe by a T-shaped coupling. The branch pipes are shown as extending horizontally outward from the main pipe and thence downwardly in parallel lines to the body B of the burner.

As here shown, the body B is of straight tubular form and at the ends communicates with the branch pipes A' A². As here shown, it is slipped into holes formed in a casting C, comprising end pieces c' c², an arc-shaped piece c³, extending between the same above the burner-body B, an arc-shaped piece c⁴, extending between the end pieces below the burner-body B, and a diaphragm or plate-like piece c⁵, extending rearward of the burner-body B, both above and below, from one of the end pieces c' c² to the other of such end pieces. Opposite the diaphragm or plate-like piece c⁵ of the casting C a diaphragm or plate c⁶ extends between the end pieces c' c². The end pieces c' c², in conjunction with the diaphragms or plate-like pieces c⁵ c⁶, form a tube above the burner-body B. It may be remarked in passing that this forms part of a flue through which the waste products of combustion ascend.

The ends of the burner-body B protrude through the end pieces of the casting C and

into couplings a' a², which, as here shown, are secured by screws a to the end pieces c' c² of the casting C. The branch pipes A' A² are shown as being screwed in these couplings. As represented, the couplings have holes in their ends and in these holes are fitted removable plugs a³, which facilitate the cleaning of the parts.

Provision is made for the escape of gas in jets from the burner-body B. In the present instance this is accomplished by inserting in the burner-body B a number of small tubes B'. These extend downwardly and forwardly from the burner-body B.

The lower ends of the tubes B' are shown as extending into a perforated plate D. This plate extends from the arc-shaped piece c⁴ of the casting C to a deflector consisting of a plate E, which is here shown as arched forwardly and as extending from one of the end pieces c' c² of the casting C to the other of these end pieces. This plate D is shown as having an upwardly-extending portion d', a portion d² extending at an angle to the portion d' and at right angles to the tubes B', and a portion d³ extending from the portion d² to the plate E.

A perforated plate F extends from the arc-shaped piece c⁴ to the upper part of the diaphragm or plate-like piece c⁵ of the casting C, and also between the end pieces c' c² of such casting. Preferably it will be made in the form of an arc of a circle.

A piece of transparent or translucent material G, such as glass or mica, extends between the end pieces c' c² and the arc-shaped pieces c³ c⁴. Preferably it will be made in the form of an arc of a circle.

Above the tubular upper portion of the casting C extends a flue H, which may be made of sheet metal, and, if desirable, may be formed integral with the plate F.

Gas passes downwardly from the main pipe A through the branch pipes A' A² to the extremities of the burner-body B, and after entering the latter, escapes from the lower ends of the tubes B'. Air enters through the perforations of the plate F and passes downwardly below the diaphragm or plate-like piece c⁵. A portion passes directly from the lower edge of the latter to the lower portion of the plate D and through the perforations

of the latter. Some of the air, however, after passing the diaphragm or plate-like piece c^5 passes between the tubes B' and escapes from the perforations of that portion of the plate D which is forward of these tubes. The flame passes around the plate E and the products of combustion pass from the upper end of the flue H and escape. It will be seen that in this example the escaping products of combustion pass by the burner-body B , and therefore must impart heat to the gas within the body.

I do not wish to be restricted to the use of the plate D , as that might be omitted.

In the lamp shown in Fig. 3 the plate-like piece c^5 of the casting C , is straight instead of being at one point curved, as in the lamp shown in Figs. 1 and 2. The tubes B' extend downwardly in a vertical direction instead of being inclined. The shape of the perforated plate D is somewhat different, and the plate E , instead of being extended from the plate D to the burner-body B , is made to extend around the burner-body and from the plate D , to the plate-like piece c^5 of the casting C . In Fig. 3, I have shown the plate E as provided with a reflecting-surface E' , which may be made of a piece of porcelain having a lip e at the upper end engaging with a lip fastened to the plate-like piece c^5 of the casting C . The transparent or translucent material G is in this example of my invention provided with lips which are engaged by lips c^7 c^8 , fastened, respectively, to the arc-shaped plate c^4 and the plate-like piece c^6 of the casting C .

The operation of this lamp is substantially like the one illustrated in Figs. 1 and 2; but in this particular modification the burner-body is not exposed to the heat of the products of combustion as in the lamp which forms the first illustration of my improvement.

As the air may circulate entirely around the upper portion of the burner-body in the example of my improvement illustrated by Fig. 3 it may obviously reach both sides of the flame without passing between the burner-tubes B' . I do not, therefore, wish to limit myself to the use of separate burner-tubes, as the gas for the flame may issue from a continuous longitudinal opening.

It will be seen that in both examples of my improvement there is a combustion-chamber in which the flame is maintained. This combustion-chamber in Figs. 1 and 2 is formed of the plate-like end pieces $c' c^2$, the arc-shaped plates $c^3 c^4$, the plate F , and the transparent

or translucent material G . In Fig. 3 it is formed of the end pieces $c' c^2$, the arc-shaped plate c^4 , the plate F , and the transparent or translucent material G .

It will also be seen that in both examples of my improvement there is a horizontally-extended burner-body; also, that there is a straight row of downwardly-extending gas-ducts.

I do not wish to be confined to an absolutely straight row of gas-ducts, when I so describe them, but I mean by referring to them as forming a straight row to distinguish them from a circular row.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a combustion chamber, a straight burner body extended through said combustion chamber, burner ducts extended downward from the burner body, a perforated plate through which the burner ducts extend and a plate-like piece extending above and below the burner body, substantially as specified.

2. The combination of a combustion chamber of substantially cylindric form, a burner body extended lengthwise within the combustion chamber, burner ducts extended downward from said burner body, a diaphragm or plate like piece rearward of the burner body and extended above and below the same, a perforated plate through which the burner ducts pass, and a deflector forward of said burner ducts, substantially as specified.

3. The combination with a combustion chamber of a burner body, extended therethrough and having a straight row of downwardly extended burner ducts, removable plugs for the ends of the burner body, the perforated plate having an inclined portion, the diaphragm rearward of the burner body and a deflector having connection with the perforated plate, substantially as specified.

4. The combination with a casing forming a combustion chamber of a burner body extended therethrough, burner ducts projected downward from the burner body, a perforated plate through which said ducts project, a deflector plate extended above and forward of the burner body and a reflecting surface on said deflector.

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

WALTER J. SMART.

Witnesses:

WM. A. POLLOCK,
WILLIAM M. ILIFF.