

(No Model.)

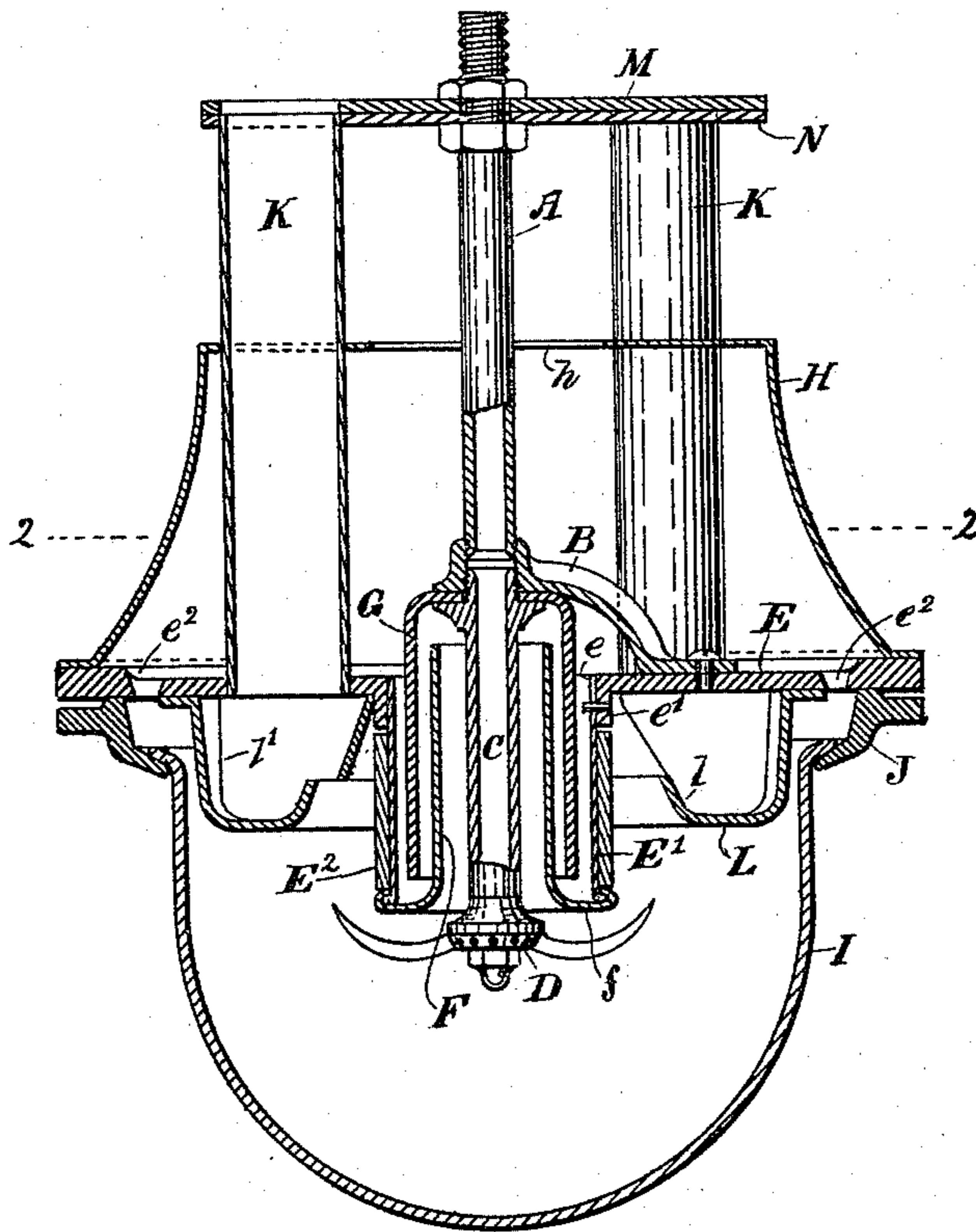
2 Sheets—Sheet 1.

H. SMITH & T. GORDON.
REGENERATIVE LAMP.

No. 573,113.

Patented Dec. 15, 1896.

Fig. 1.



WITNESSES:

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W. A. Pauling

INVENTORS,
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BY *Edwin H. Brown*

THEIR ATTORNEY.

(No Model.)

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Fig. 3.

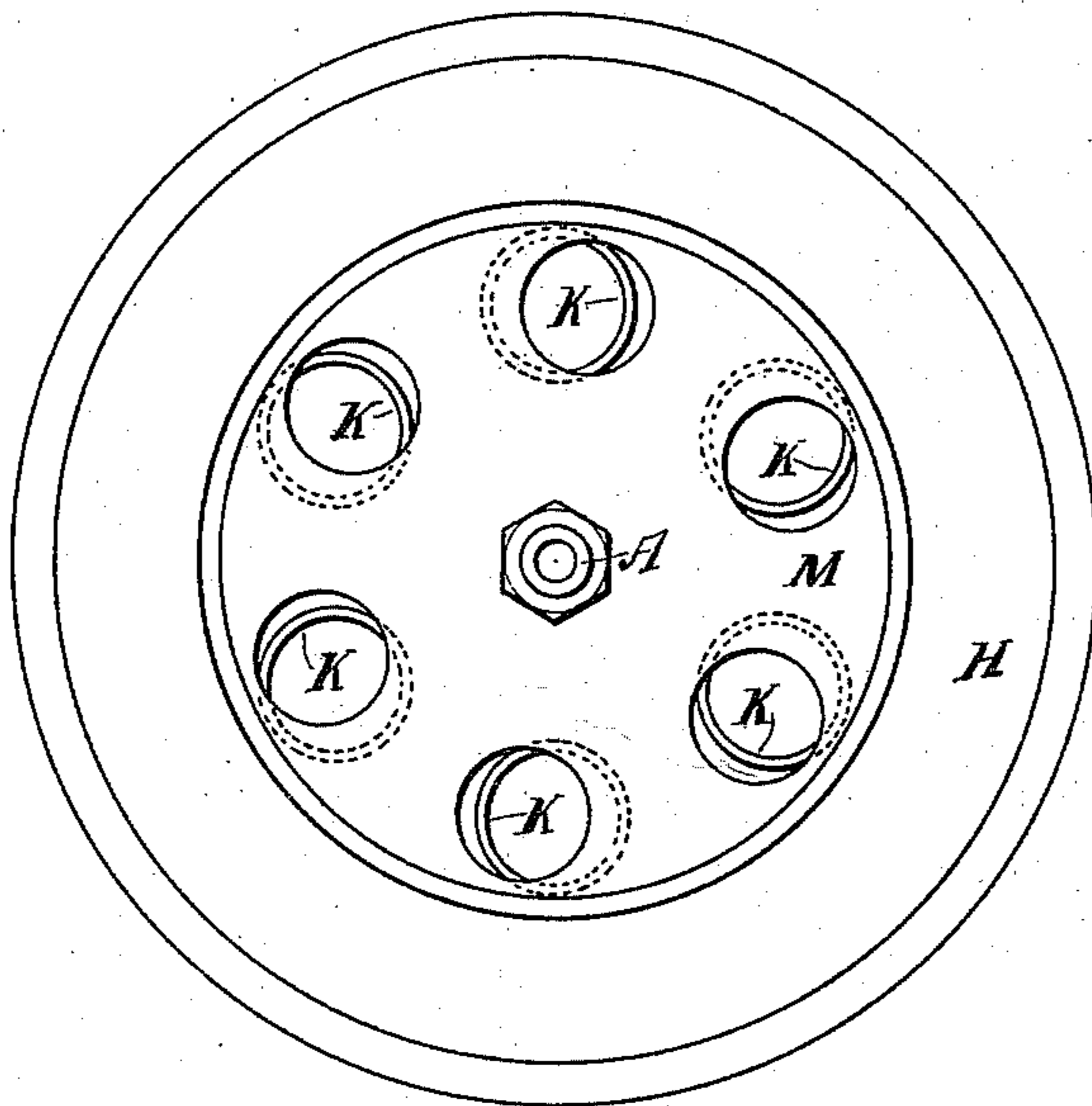
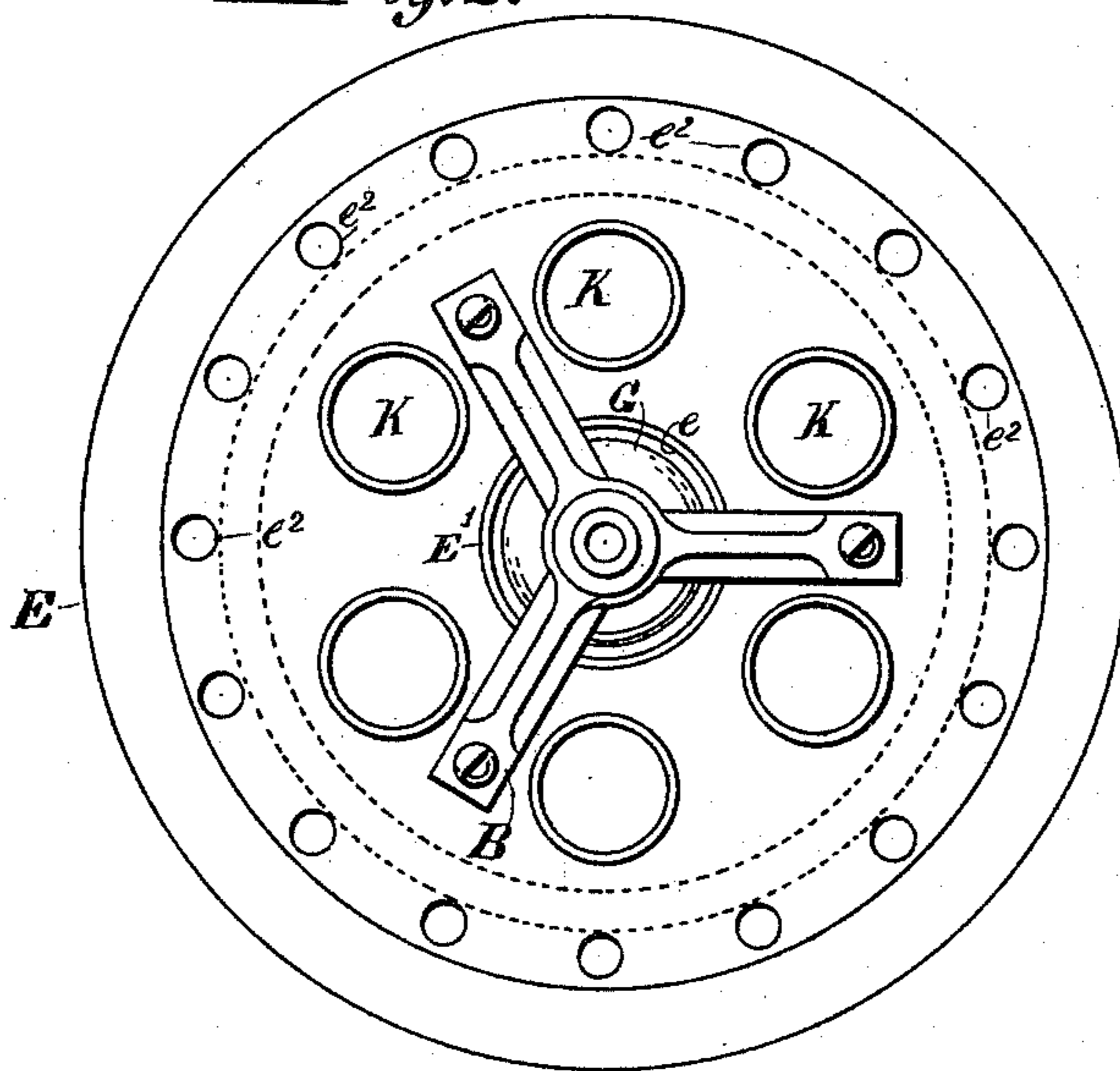


Fig. 2.



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UNITED STATES PATENT OFFICE.

HERBERT SMITH, OF BAYONNE, NEW JERSEY, AND THOMAS GORDON, OF
NEW YORK, N. Y.

REGENERATIVE LAMP.

SPECIFICATION forming part of Letters Patent No. 573,113, dated December 15, 1896.

Application filed December 24, 1894. Serial No. 532,774. (No model.)

To all whom it may concern:

Be it known that we, HERBERT SMITH, of the city of Bayonne, county of Hudson, and State of New Jersey, and THOMAS GORDON, of the city, county, and State of New York, have invented a certain new and useful Improvement in Regenerative Lamps, of which the following is a specification.

We will describe a lamp embodying our improvement and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a central vertical section of a lamp embodying our improvement. Fig. 2 is a horizontal section taken at the plane of the dotted line 2 2, Fig. 1, a certain shell which is illustrated in Fig. 1 being wholly omitted. Fig. 3 is a top view of the lamp.

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

Referring to the example of the improvement illustrated by Figs. 1, 2, and 3, A designates a gas-supply pipe terminating at the upper end in an externally-screw-threaded nipple forming a means for connecting the burner to any convenient support, whence it may receive gas. At the lower end it is shown as screwed into a central collar of a spider B. The collar of this spider also receives an externally-screw-threaded nipple of a gas-burner pipe C, and hence forms a coupling of the pipe C.

At the lower end of the gas-burner pipe C is a gas-burner D, which is provided externally with an inclined surface studded with perforations, whence the gas issues.

The legs of the spider B are secured by screws or otherwise to a plate E, having a central hole *e* and a rim or lip *e'* extending downwardly therefrom. Within the rim or lip *e'* is fastened a shell E', that is preferably made of sheet metal, and provided externally with a cylinder or ring E², of refractory material, constituting a reflector. This cylinder or ring, it will be seen, is below the rim *e'* of the plate E.

The shell E' may be fastened to the rim *e'* of the plate E in any convenient manner. Preferably the connection will be detachable, such, for instance, as that now commonly known as a "bayonet-joint."

F designates a shell, preferably made of sheet metal and having a cylindric tubular body considerably smaller than the shell E', open at the upper end and flared outwardly at the lower end to form a flange *f*. This shell F may be supported in any suitable manner. As here shown, it is connected by a lapped seam with the lower edge of the shell E', so that between these two shells is formed an annular space that is closed at the bottom, but open at the top.

As here shown, the upper portion of the burner D is curved outwardly and the inner part of the shell F is similarly curved. The shell F serves as a deflector for air passing to the upper surface of a flame emanating from the burner.

G designates a shell which is mainly of cylindric tubular form, but has its upper edge bent inward to fit under the central collar of the spider B and between said collar and a flange that extends outwardly around the gas-burner pipe C. This shell G is secured in place by means of said collar and flange. At the lower end it is open, and it extends downwardly almost to the flange *f* of the shell F.

Above the plate E is a shell H, which may be made of sheet metal. It is shown as closed at all points except at the center, where it has an opening *h* for the entrance of air. Air thus admitted passes down into the space between the shell E' and the shell G. Thence it rises through the space between the shell G and the shell F, and finally descends to the space between the shell F and the burner-pipe C to the upper surface of the flame. A sinuous air-passage for the inner or upper surface of the flame is thus formed between the shell H and the inner or upper side of the flame. This is advantageous, because it will trap the air and prevent it, when the burner is lighted, from moving the wrong way within a lamp. It also of course conduces to a heating of the air prior to reaching the point of combustion.

The plate E is provided with holes *e²*, here shown as located near its circumference. These holes serve to prevent the inflow of air to a globe I, surrounding the burner and the flame, so that air will properly be supplied to the outer surface of the flame.

The globe I may be made, as usual, of glass and supported by means of an outwardly-extending lip in a ring-shaped plate J. Such plate J may be secured in any suitable manner to the plate E, as, for instance, by a hinge and latch.

From the plate E extend upwardly a number of pipes K, which are inserted in holes formed in the said plate.

Below the pipes K and hence below the plate E is an annular shell L, having at the upper edge an outwardly-extending flange, and at the lower portion it is turned inwardly toward the center of the burner and then upwardly. The outer side of the body of this shell L is close to the globe I, and thus a narrow passage is formed for the air passing to the outer surface of the flame. Thus the air is equalized and directed to the point where needed. This shell L, being under the pipes K, conceals them from the view of any person looking into the globe. Its inner upturned edge *l* serves to direct the products of combustion to the interior of the shell and to the pipes K. Properly proportioning the space between the upturned edge *l* of the shell L and the deflector E² the products of combustion may be uniformly distributed to the pipes K. If desirable, there may be a number of radial partition-plates *l'* in the shell L for dividing up the products of combustion so as to distribute them properly to the different pipes K.

Combined with the upper ends of the pipes K is a regulating-plate M, here shown as made in the form of a disk having holes of the same size as the interiors of the pipes. This plate is connected to the gas-supply pipe A, so as to be capable of rotary adjustment, the connection, as here shown, consisting of two nuts engaged with the gas-supply pipe, one above and the other below the plate. There may be another plate, N, fitted to the upper ends of the pipes K and provided with holes for permitting these pipes to pass through it. By rotarily adjusting the plate M relatively to the

ends of the pipes K the latter may be more or less contracted. Thus provision is afforded for varying the draft to suit gases of different qualities.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a central gas-pipe, a burner or burners secured to its lower end, a shell F surrounding the gas-pipe and forming with the same an annular conduit for air, a shell G surrounding shell F and forming therewith an air-conduit, a shell E' supporting shell F and forming with shell G an air-conduit, a shell L surrounding the shell E' and forming therewith a conduit for the escape of waste products, and a plate E supporting shells L and E' and having air-inlet openings and openings for the escape of waste products and a plurality of flues each separately communicating with the atmosphere, substantially as specified.

2. The combination of a central gas-pipe, a burner or burners secured to its lower end, a shell F surrounding the gas-pipe, and forming with the same an annular conduit for air, a shell G surrounding shell F and forming therewith an air-conduit, a shell E' supporting shell F and forming with shell G an air-conduit, a shell L surrounding the shell E' and forming therewith a conduit for the escape of waste products, a plate supporting shells L and E' and having air-inlet openings and openings for the escape of waste products, a shell H surrounding the escape-flue, flues K extending from the plate E, and each separately communicating with the atmosphere, and a combustion-chamber supported by the plate E, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HERBERT SMITH.
THOMAS GORDON.

Witnesses:

EMMET PHILIPS,
WM. ARNOUX.