

(No Model.)

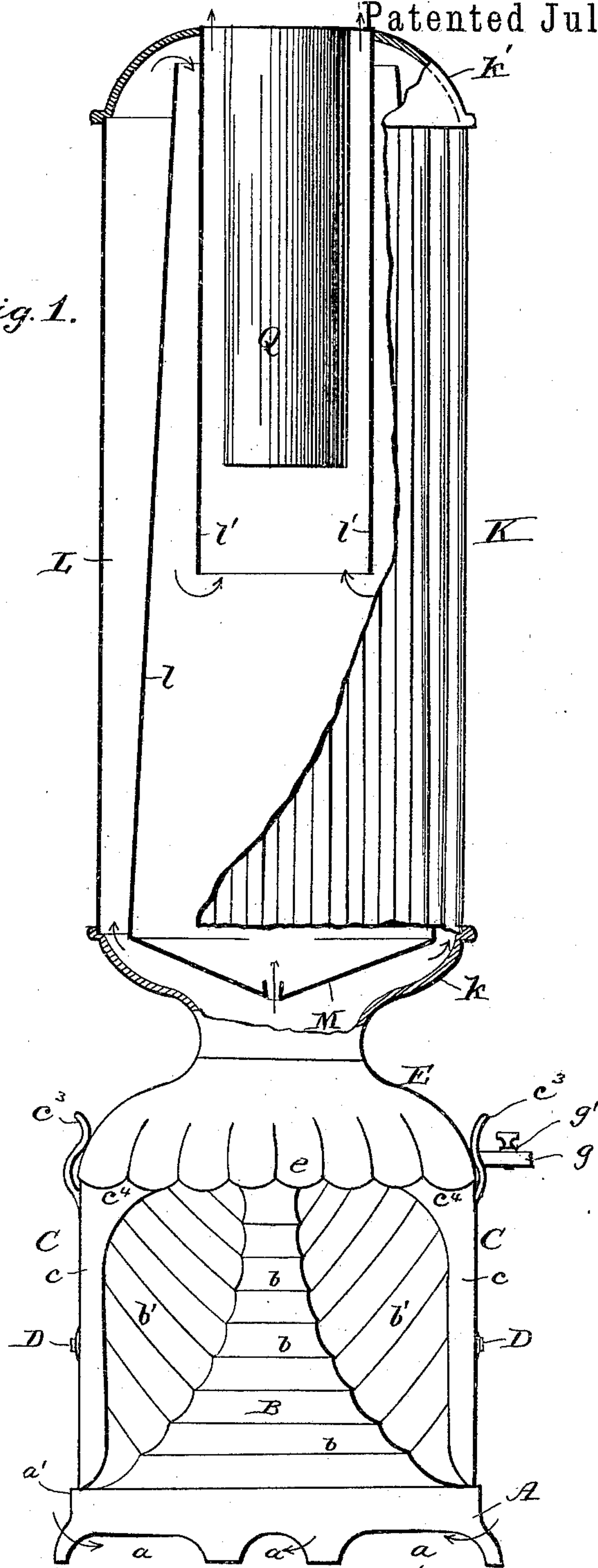
2 Sheets—Sheet 1.

A. BROWN.
GAS HEATER.

No. 431,326.

Patented July 1, 1890.

Fig. 1.



Witnesses
J. H. Curry.
Ed. Sturtevant

By his Attorneys

Inventor
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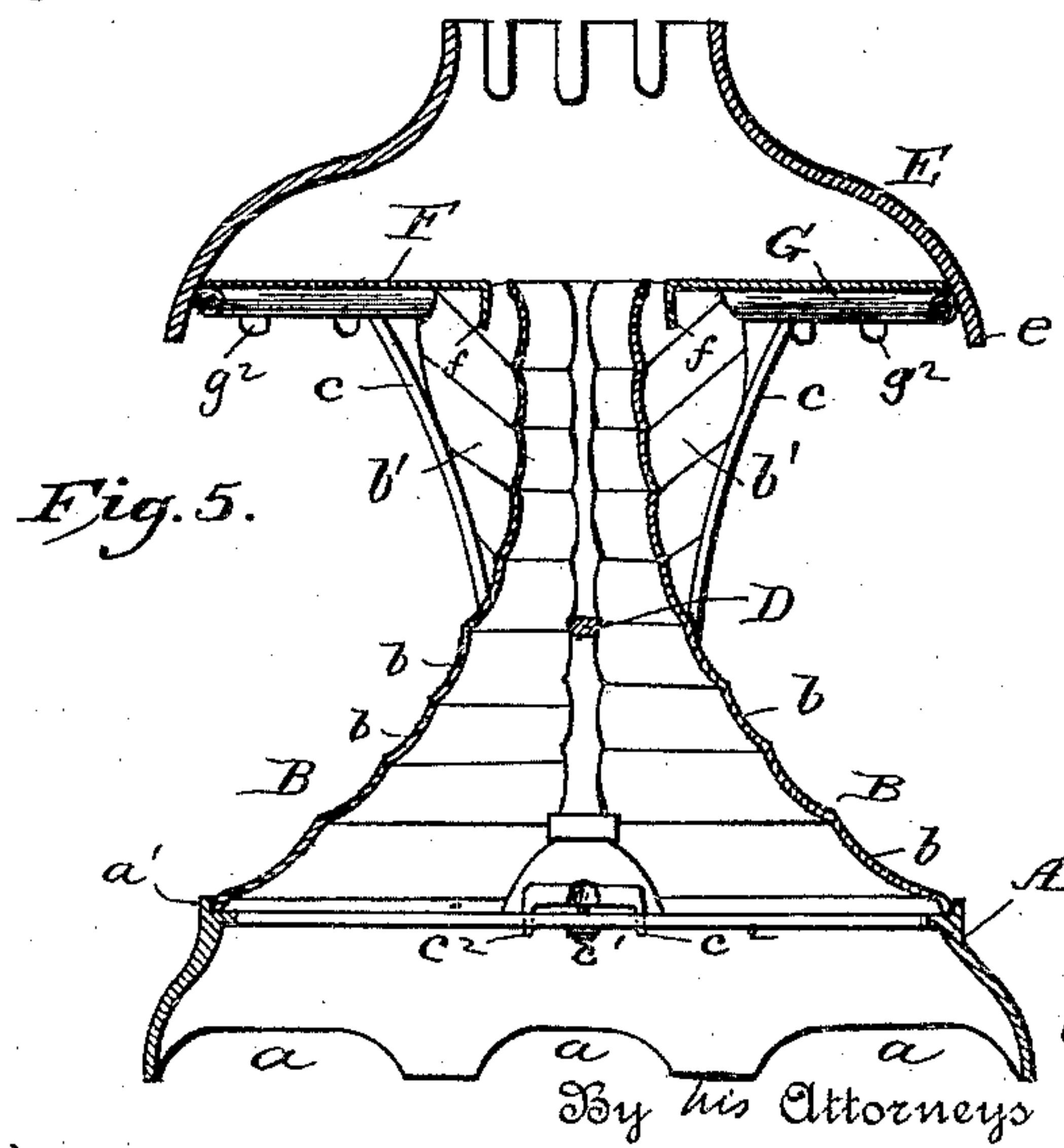
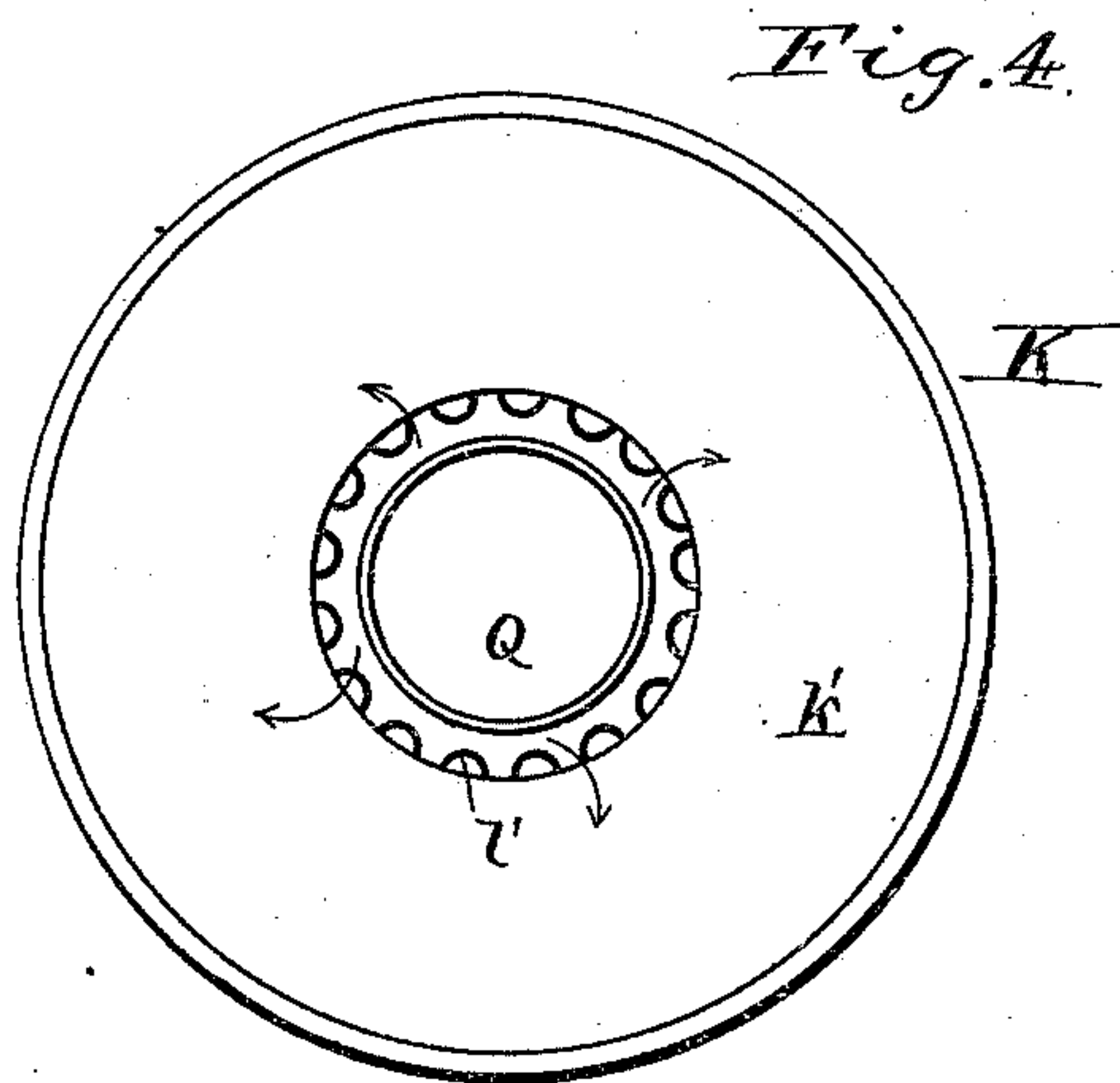
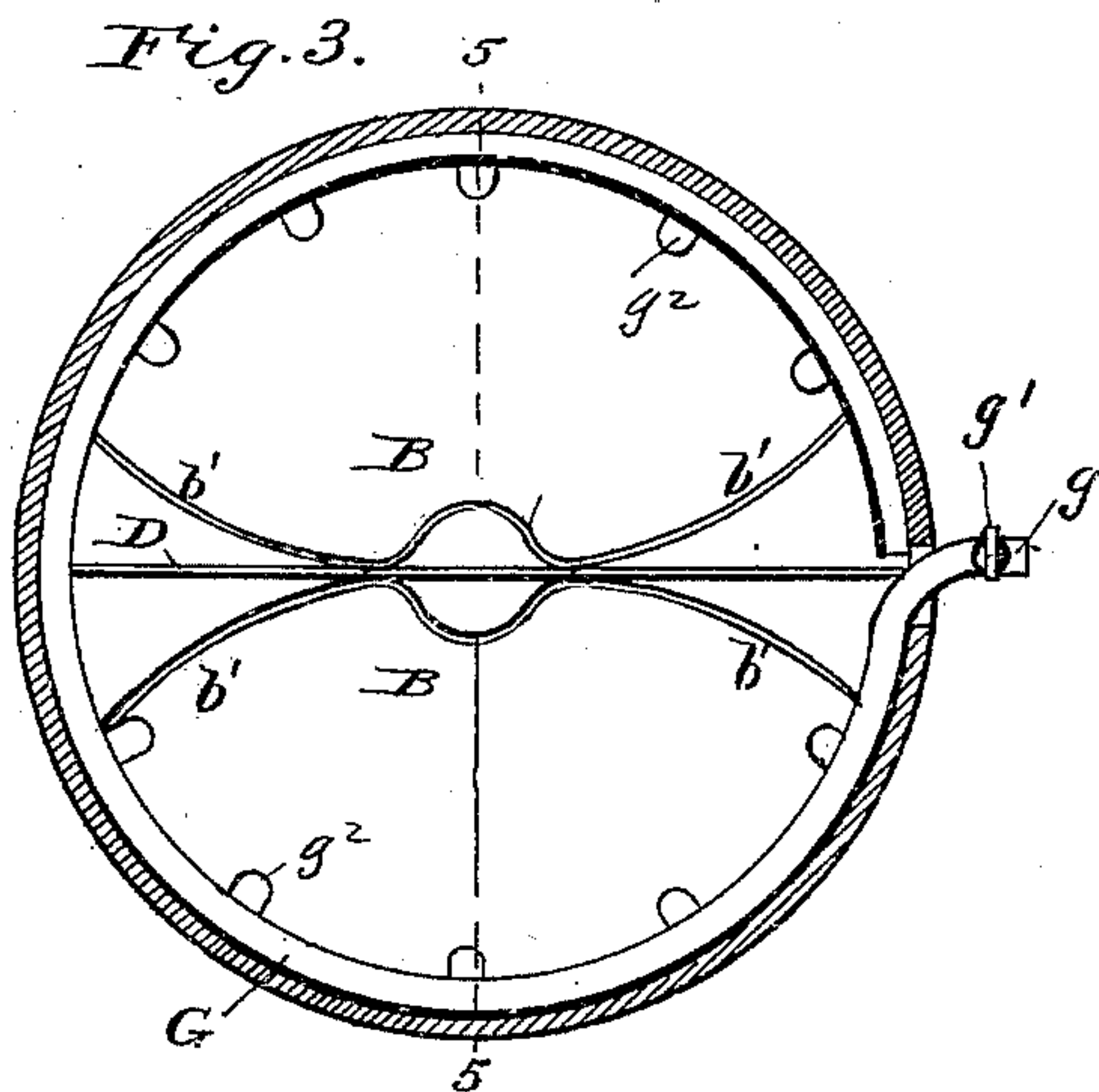
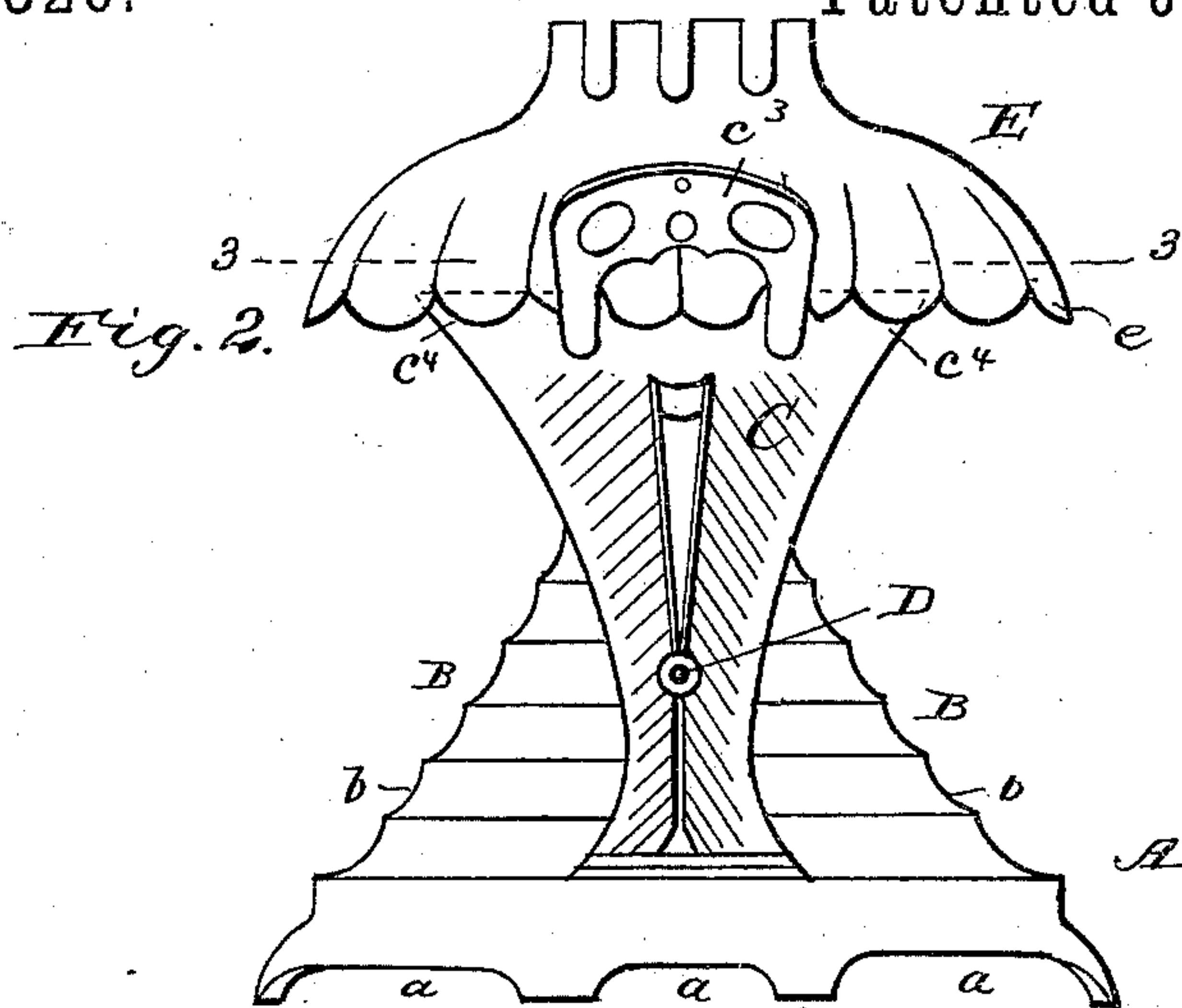
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UNITED STATES PATENT OFFICE.

ALEXANDER BROWN, OF CHICAGO, ILLINOIS.

GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 431,326, dated July 1, 1890.

Application filed December 31, 1889. Serial No. 335,508. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER BROWN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Heaters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is directed to the production of a gas-heater by which the gas will be greatly economized and its calorific effect made practically available in a very high degree for the warming of apartments.

The invention is also directed to simplicity, convenience, and cheapness of construction in a heater, which shall nevertheless possess the above-mentioned high calorific efficiency. I have also combined in the construction of and with the heater means for giving the desired degree of humidity to the heated air as it leaves the device.

With these objects in view my invention consists in the parts and combinations thereof, hereinafter set forth and claimed, without, however, being confined to the exact construction and arrangement which, for the sake of illustration, I have specified.

In order to make my invention more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect.

In said drawings, Figure 1 is a front elevation, partly in section, of a gas-heater embodying my invention. Fig. 2 is a side view of the lower part of the device, partly in section. Fig. 3 is a horizontal section on line 3 3, Fig. 2. Fig. 4 is a plan view of the device as seen in Fig. 1. Fig. 5 is a vertical section of the lower part of the device on line 5 5, Fig. 3.

Referring to the drawings, A indicates the base of the heater, preferably of circular form, adapted to rest upon the floor, and provided with draft-openings *a*, by which cold air is admitted to the center of the heater. Around its upper edge the base A is formed with an upwardly-extending flange *a'* and horizontal shoulder adapted to contain and

support the lower edges of the heating or reflector plate or plates B B. The latter are concave, as shown, and preferably provided with flat facets or curved corrugations *b*, running horizontally. In the construction illustrated the reflector is composed of two plates, which, instead of joining one another at their edges, do not quite meet, but extend outwardly and upwardly, as shown at *b'*, flaring away from each other and confined at their outer edges by the flanges *c* of the side plates C, thus giving additional reflecting-surface and forming, together with said plates, two side air-ducts in addition to the central conical duct formed by the main portions of the reflector-plates.

The side plates C are secured to the base A by screws *c'*, being further provided with pins *c''*, which enter corresponding perforations or recesses in the base and insure the stability and rigidity of the sides. Horizontally the side plates are stayed by a rod or bar D, having a head at one end and nut at the other, which rod passes from side to side of the heater through the air-ducts and is connected to the middles of said plates C. The latter are also, by preference, provided with handles *c'''*, by which the heater may be conveniently moved from place to place.

E is a dome surmounting the reflector and side plates and having a depending ornamental flange *e*. This flange fits within the handle *c'''* and outside of the upward projections *c''* of the side plates. The dome is thus supported vertically by said projections *c''*, and is held down upon them by the engagement of the handles, which are suitably curved inward and bear upon the sloping face of the dome, under the stress of bar D, in an obvious manner.

Between the top edges of the reflector-plates and the dome is fitted and secured a horizontal plate F, which has its middle portion cut away to permit the hot air from the central and side ducts to ascend into the dome. This cut-away portion is turned down to form shields *f*, which guide the products of combustion also, which rise up the outer face of the reflector into the dome. At its upper end the dome is narrowed and provided with a

draft-aperture, through which the heated air and products of combustion pass upward. This aperture may be connected with a drum, hereinafter described.

5 The burner-supply pipe is shown at G, and is curved or circular, extending around the heater just within and concealed by the flange *e* and supported by the projections *c*⁴ and reflector-plates. It has a lateral pipe *g* extending
10 through the flange *e* at one side and adapted to be connected with a rubber tube.

*g*¹ is a cock for closing the pipe *g*.

*g*² are the burner-tips pointing downwardly and inwardly from the pipe G and directed
15 toward the reflector.

It results from the construction above described that there is continuously passing up through the heater a strong induced air-current, which is concentrated just before it enters the dome. At this point it has the effect
20 of drawing in another current or currents direct from the burners, thus feeding the flames with an abundance of fresh air and promoting that complete combustion which is so desirable in a gas-heater.

25 It will be understood that I may use my invention in connection with natural or other combustible gas.

For a grate-heater one only of the reflector-plates B may be used, and it may be provided
30 with a back of any desired character, which will give a central and two side air-heating chambers or ducts.

K is a heating-drum which I may employ
35 with the heater thus far described. It is provided with a tapering base portion *k*, adapted to fit the draft-opening of the drum E. Within the base *k* is a conical deflector M, arranged point downward and adapted to force the hot
40 air into the outer chamber L of the drum, which chamber is formed by the partition *l*, having the form of a truncated cone rising from the outer edge of the deflector to near the top of the drum. The outer wall of the
45 drum is corrugated, as shown, to give greater heating-surface, and is secured at its lower edge to the base *k* and at its upper edge to a dome-shaped top *k*'. By the latter the ascending air is directed over the top of the
50 partition *l* and down around the lower edge of a cylindrical partition *l*', which throws the air to the center of the drum above the hot deflector M. Thence the air arises through an escape-opening in the middle of the top *k*',
55 surrounding in its course and passing by the open mouth of a water-reservoir Q, which is situated within, supported by, and concealed by the drum. By this means a slow evaporation of the contents of the reservoir
60 is caused to take place, giving to the air a very desirable degree of humidity. This system of deflectors and partitions also insures the deposit of any solid products of combustion before the air emerges from the drum.
65 The deflector M is perforated at *m* to cause

the dead-air in the lower portion of the drum to be driven out.

Having thus described my invention, what I claim is—

1. In a gas-stove, the combination, with the
70 gas-supply pipe having burner-orifices, of a reflector-plate B, concave in the direction from the bottom to the top, convex at its middle in a horizontal direction, and having the upwardly and outwardly extending edge or side
75 portions *b*' and opposing plates, whereby are formed central and side air-ducts along the back of the reflector-plate, substantially as set forth.

2. In a gas-stove, the combination, with a
80 gas-supply pipe, of two reflector-plates B, back to back, each concave in the direction from the bottom to the top, convex at its middle in a horizontal direction, and having the outwardly and upwardly extending edge or
85 side portions *b*' and side plates C, whereby are formed central and side air-ducts along the backs of the reflector-plates, substantially as set forth.

3. In a gas-stove, the combination, with the
90 lower portion having a gas-supply pipe and the reflector-plates having between them an air duct or ducts, of a dome, and the heating-drum mounted thereon provided with the central deflecting-plate M, the annular parti-
95 tion *l*, rising therefrom and terminating below the top of the drum, and the smaller partition *l*', extending downward from the top of the drum within said partition *l*, substantially as set forth.

4. In a gas-stove, the combination, with the
100 lower portion having a gas-supply pipe and reflector-plates, of the heating-drum mounted upon said lower portion and provided with the conical deflecting-plate M, having a cen-
105 tral aperture, the annular partition *l*, rising from said deflector-plate, the top *k*', having a central opening, and the smaller partition *l*', extending downward from said top and within the partition *l*, substantially as set
110 forth.

5. In a gas-stove, the combination, with the
lower heating or burner portion of the drum K, having an open bottom *k*, communicating with said burner portion, a centrally-open
115 top *k*', and exterior corrugated wall L, of a central water-reservoir Q, situated within the drum, and partitions *l* *l*', which conduct the heated air upward along the channels of the
120 exterior wall and thence down below said reservoir, whence said air escapes upward around the reservoir and past its mouth, substantially as set forth.

6. The combination of the gas-supply pipe, the reflector-plates B, having the extensions
125 *b*' and arranged back to back to form central and side air-ducts, side plates C, having flanges *c*, which inclose the edges of said reflector-plates, and a dome surmounting said
130 parts, substantially as set forth.

7. In a gas-stove, the combination of the base
A, having a flange a' , reflector-plates B, seated
in the base within said flange, arranged back
to back and having between them air-ducts,
5 side plates C, secured to said base and hav-
ing flanges c inclosing the edges of the re-
flector-plates, a transverse connection D for
holding together the side plates, a dome hav-
ing rounded or inclined sides and supported

upon the side plates, and handles c^3 , carried 10
by the side plates and bearing upon the sides
of the dome, substantially as set forth.

In testimony whereof I affix my signature
in the presence of two witnesses.

ALEXANDER BROWN.

Witnesses:

FRANK R. WESSER,
T. P. BROWN.