C. E. BALL.

Carbureting-Lamp.

No. 206,999. Patented Aug. 13, 1878.

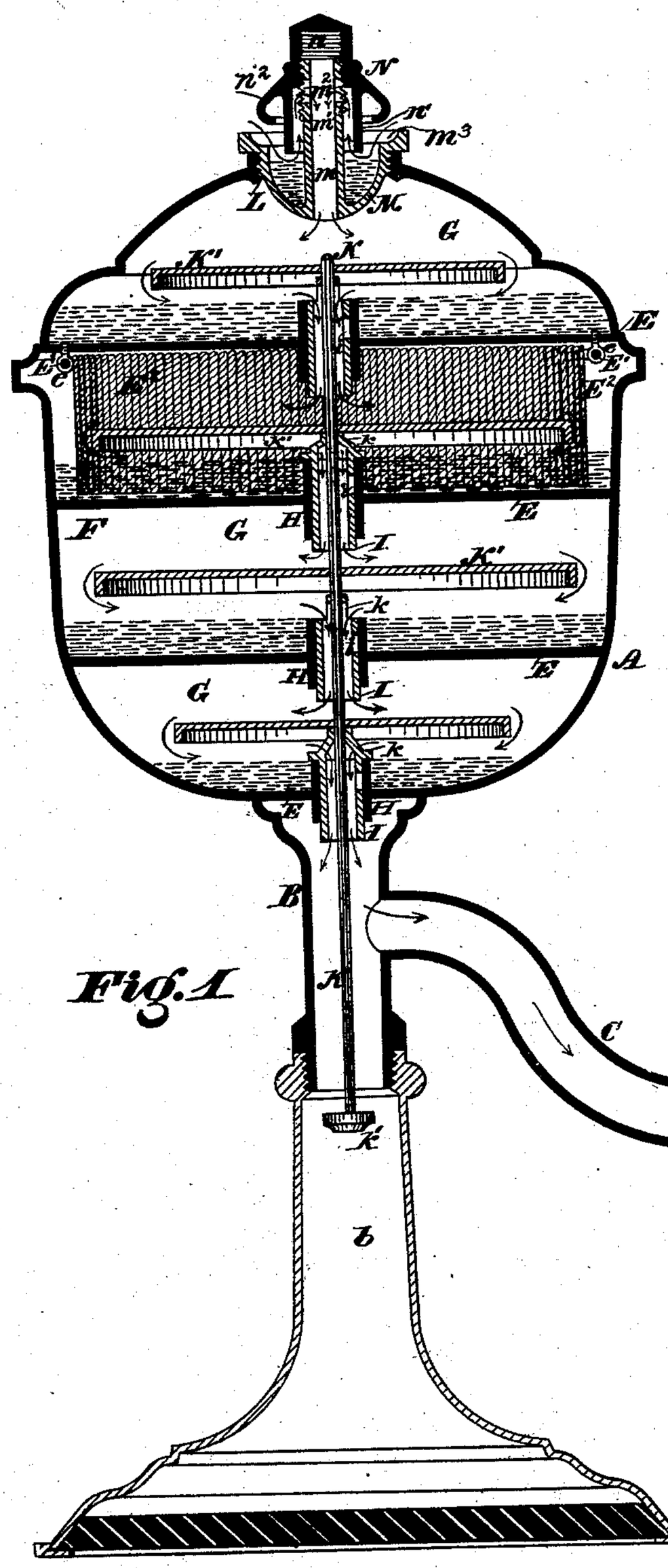

Fig. 1

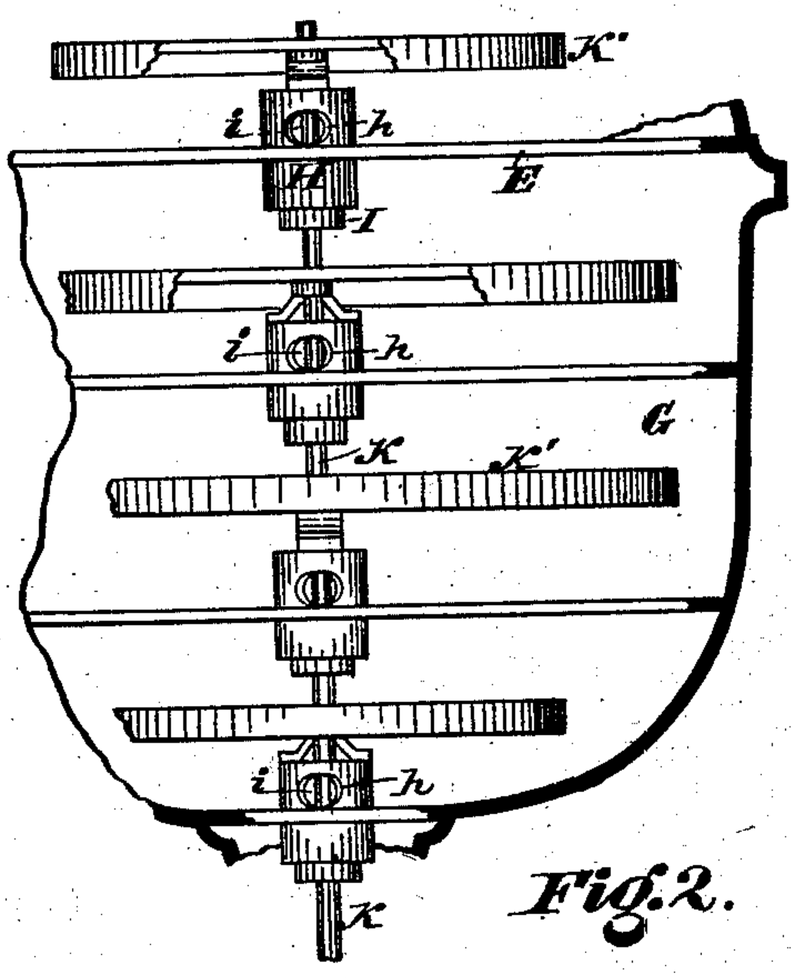

Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CARBURETING-LAMPS.

Specification forming part of Letters Patent No. **206,999,** dated August 13, 1878; application filed November 30, 1877.

To all whom it may concern:

Be it known that I, CHARLES E. BALL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Carbureting-Lamps; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a longitudinal vertical section of my invention, and Fig. 2 is a detail section.

My invention consists in the peculiar construction, combination, and arrangement of parts, as hereinafter fully set forth, having reference particularly to the following: First, to means for regulating the admission of air to the carbureting-chamber and for preventing the wasteful evaporation of hydrocarbon fluid from the latter; second, to means for preventing the direct flow, through the communicating-pipes, of hydrocarbon fluid from one compartment to another in the carbureting-chamber, said means having reference also to conducting the air-currents to or near the walls of the carbureting-chamber before coming in contact with the fluid to be vaporized, and thereby avoiding a direct course for said air-currents through the carbureting-chamber; third, to providing means for the exit of the heavier parts of the hydrocarbon fluid not removed by evaporation.

Referring to the accompanying drawing, A designates a lamp-bowl of any suitable shape, and B a hollow standard supporting the same, having a foot, *b*. C is a pipe leading from the standard B to a burner, D. Within the reservoir A is a series of diaphragms, E, dividing the interior chamber F, formed by the bowl A, into compartments G. Each of the diaphragms E is connected at its outer edge to the surrounding wall of the chamber F, so as to effect a tight joint therewith, and is formed with a central opening, in which is fastened a tube, H, each of said tubes, which form the series shown, extending both above and below the diaphragm to which it is secured.

I are other tubes located within the tubes H, and attached by bridges or radial arms *k* to a central rod, K, which terminates at its lower extremity in a thumb-nut, *k'*.

h and *i* are registering-openings in the tubes H I, having their lower edges flush with the upper surfaces of the diaphragms E. By means of the rod K the tubes I may be turned on their longitudinal axes to bring the openings *h* and *i* into register. When not so turned the tubes I close the openings *h*, said tubes I thus acting as valves to said openings.

L indicates the inlet to the bowl A, consisting of a threaded opening in which is inserted a cup, M, having a central tube, *m*, screw-threaded at m^1 and formed with air-passages m^2.

N is a nut, which screws down upon the tube *m*, and is formed with an annular flange, n^1. O is a shut-off cock, the body and stem of which are composed, respectively, of a spun-metal shell, *o*, having lateral passages *o' o'*, and stem P, having bottom *p*, to which is secured a key, p^1. p^2 are the openings or ways in said stem, and Q is a spiral spring for holding the latter seated.

K' are deflecting-disks secured to the rod K about midway between the upper edge of one tube H and the lower edge of the tube H next above, one of said disks also surmounting the rod K, or being attached to said rod a short distance above the uppermost tube H.

E^1 is a rim-wire, attached by means of hangers *e* to the under side of the upper diaphragm E, and E^2 are strands of wick hung upon said wires, and forming a fibrous annular curtain for one of the compartments G. Said fibrous ceiling and curtain may also be used in one or more of the other compartments, if desired.

The operation is as follows: The foot *b* and cup M with nut N are first removed by unscrewing. Hydrocarbon fluid is now poured through the inlet L, falling upon the uppermost disk K', and flowing therefrom around its edges onto the diaphragm E next below. As soon as the fluid fills the first compartment, G, as high as the top of the tube H in said compartment, (the tube I being then turned so as to close the openings *h*,) the feed being continued, said fluid passes out through said tube H down upon the disk K' next below, and rises

upon the second diaphragm, E, to the top of the next tube H, and so on through the series. When all the compartments G are thus filled, and the fluid begins to issue from the bottom of the lowest tube H, the feeding is stopped. The standard B is now screwed into the foot *b* and the cup M into the inlet-opening L. The nut N is next screwed down upon the tube *m*, its threaded portion *n* being above the openings m^2, so as to leave free passage for the air-currents through said openings, as indicated by the arrows. Water or glycerine is then poured into the cup M until it reaches nearly to the lower edge of the flange n^1. The cock O is now opened and a light applied to the burner D. The air, which passes in through the openings m^2, descends through the tubes H and over the hydrocarbon fluid in the compartments G, becoming carbureted in its progress, and supplying the burner with illuminating material, finding its way to said burner through the pipe C.

The course of the air-currents through the carbureting-chamber is sinuous or indirect, as indicated by the arrows, the disks K′ preventing the direct passage of said currents through the tubes H, or in a straight line from one of said tubes to the other, thus insuring the movement of said currents over a large extent of fluid-surface, thereby securing more complete carbureting than would be obtained if a direct course were adopted. Said disks K′ also serve, in filling, to prevent the fluid from passing directly from one tube H to the other, as it would if such disks were not provided.

The fibrous curtain, becoming saturated with the hydrocarbon fluid, holds the latter in position and condition to be readily taken up by the air, thus facilitating the carbureting of said air-currents.

When it is desired to extinguish the light, the cock O is closed by turning its key in the usual manner.

When the lamp is burning the supply of air is regulated by raising or lowering the nut N, so as to increase or diminish the area of the openings m^2, as may be required.

When the light is extinguished, and it is desired to prevent wasteful evaporation of the hydrocarbon fluid, the nut N is screwed down until its flange n^1 enters the water or glycerine in the cup M, thus forming a liquid-joint through which air cannot enter to produce evaporation within the globe A.

When it becomes necessary to remove from the compartments G the heavier parts of the hydrocarbon fluid not taken up by evaporation, and which form a residuum, the foot *b* is removed, and the tubes I turned by means of the rod K until the openings *h* and *i* register, when such residuum will flow out through said openings and through the tubes H and I.

When the nut N is screwed down an exterior flange, n^2, with which it is provided, finds a seat in a groove or ledge, m^3, formed on the cup M, thus preventing the water or glycerine in said cup from spilling when the lamp is moved.

It is to be understood that the following claims are confined to improvements upon carbureting-lamps constructed upon the same general principles as mine. The cup M is not sought to be claimed broadly, as a cup similarly placed, and having a centrally-rising tube with opening at top, is old in lamps. So, too, the disk K′ embraced in one of the claims is only claimed as an element of combination, disks or diaphragms arranged one above the other over communicating-tubes being well-known in carbureting-lamps.

What I claim as my invention is—

1. The cup M, having the central tube *m* rising from the bottom thereof, and air-passages m^2, in combination with lamp globe or reservoir A and a suitable nut or cap attached to the top of said tube, substantially as shown and described.

2. In combination with the cup M, having central tube *m*, the nut N, having flanges n^1 n^2, substantially as shown and described.

3. In combination with the tubes H, the rod K and tubes or valves I, substantially as shown and described.

4. In combination with the diaphragms E E and central rod K, the disks K′, secured within the compartments G above the ends of the tubes H, substantially as described, for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of November, 1877.

CHAS. E. BALL.

Witnesses:
SAML. J. VAN STAVOREN,
CHAS. F. VAN HORN.