

No. 752,773.

PATENTED FEB. 23, 1904.

M. & A. HERSKOVITZ.
BUNSEN BURNER.

APPLICATION FILED APR. 1, 1901.

NO MODEL.

Fig. 1.

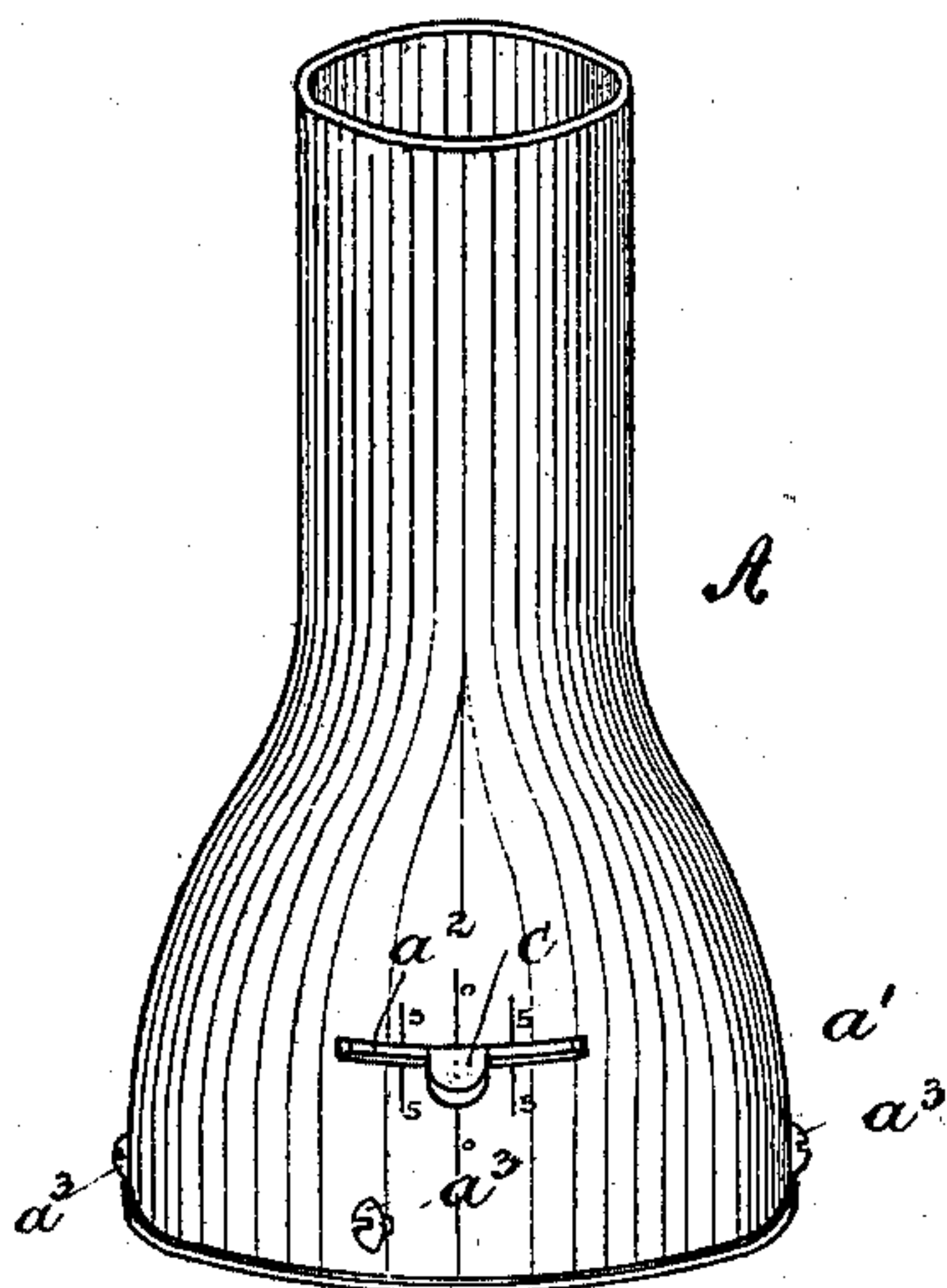


Fig. 2.

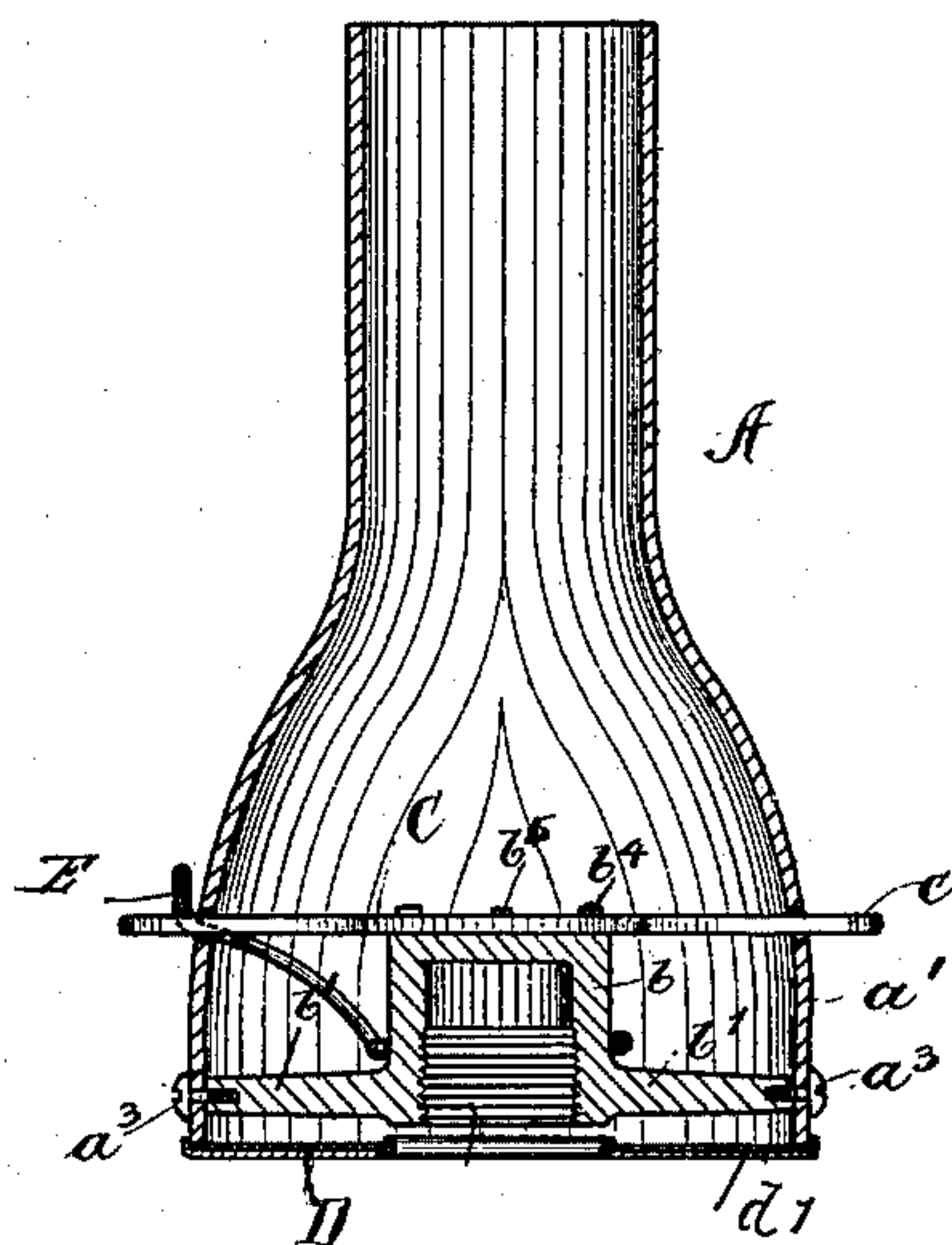


Fig. 3.

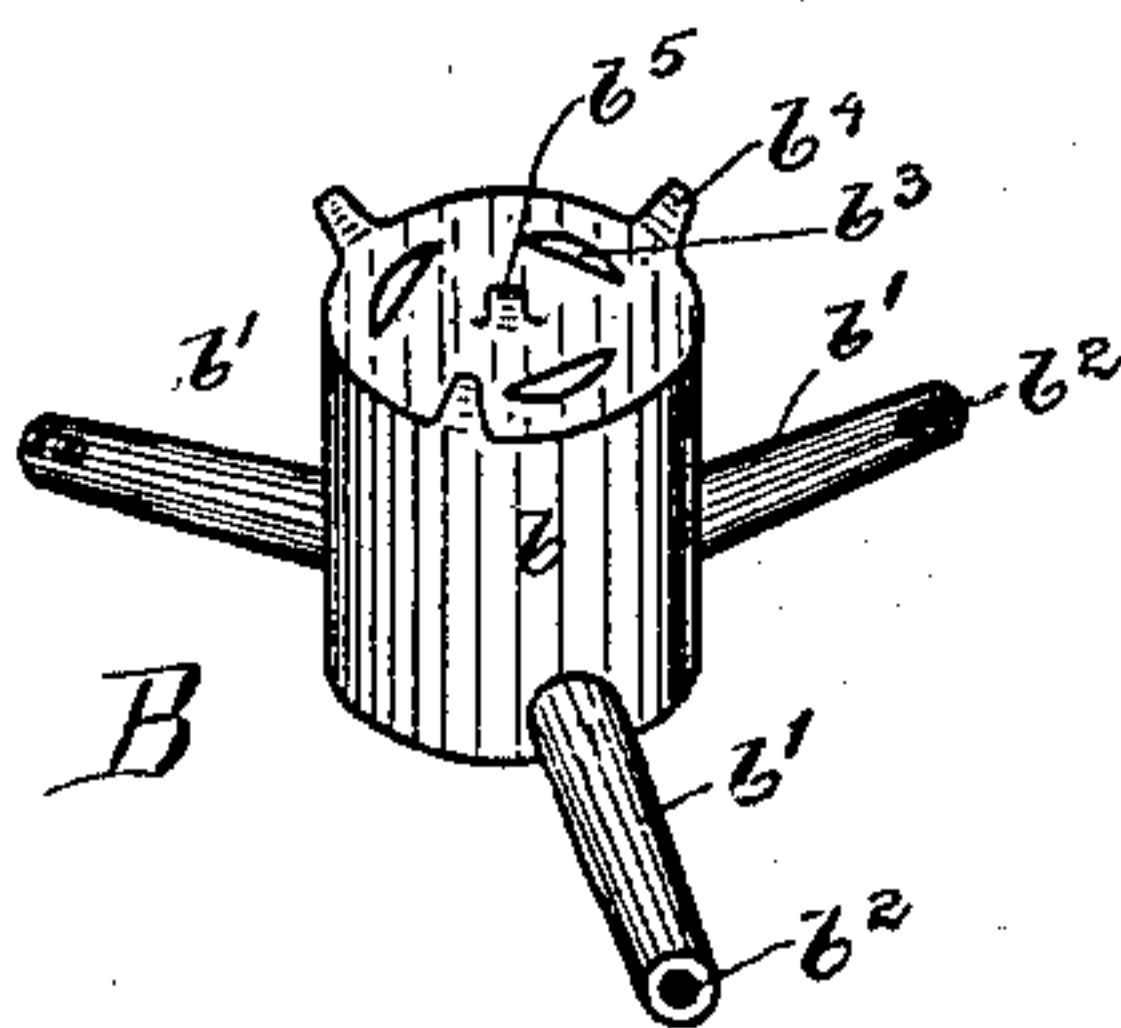


Fig. 4.

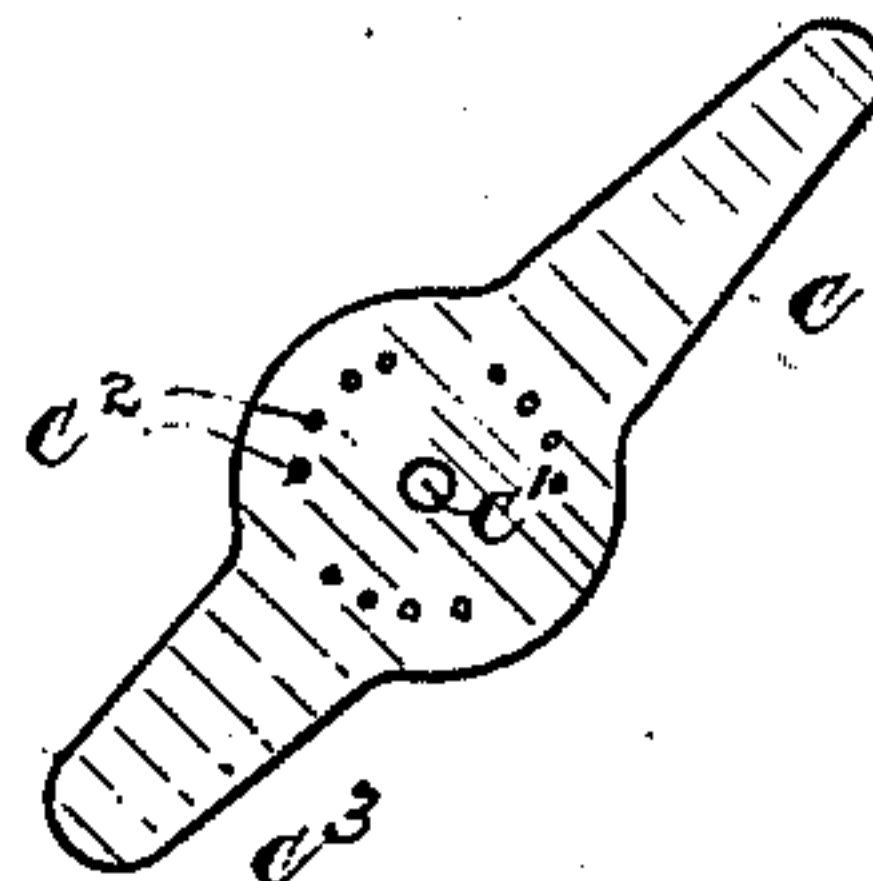


Fig. 5.

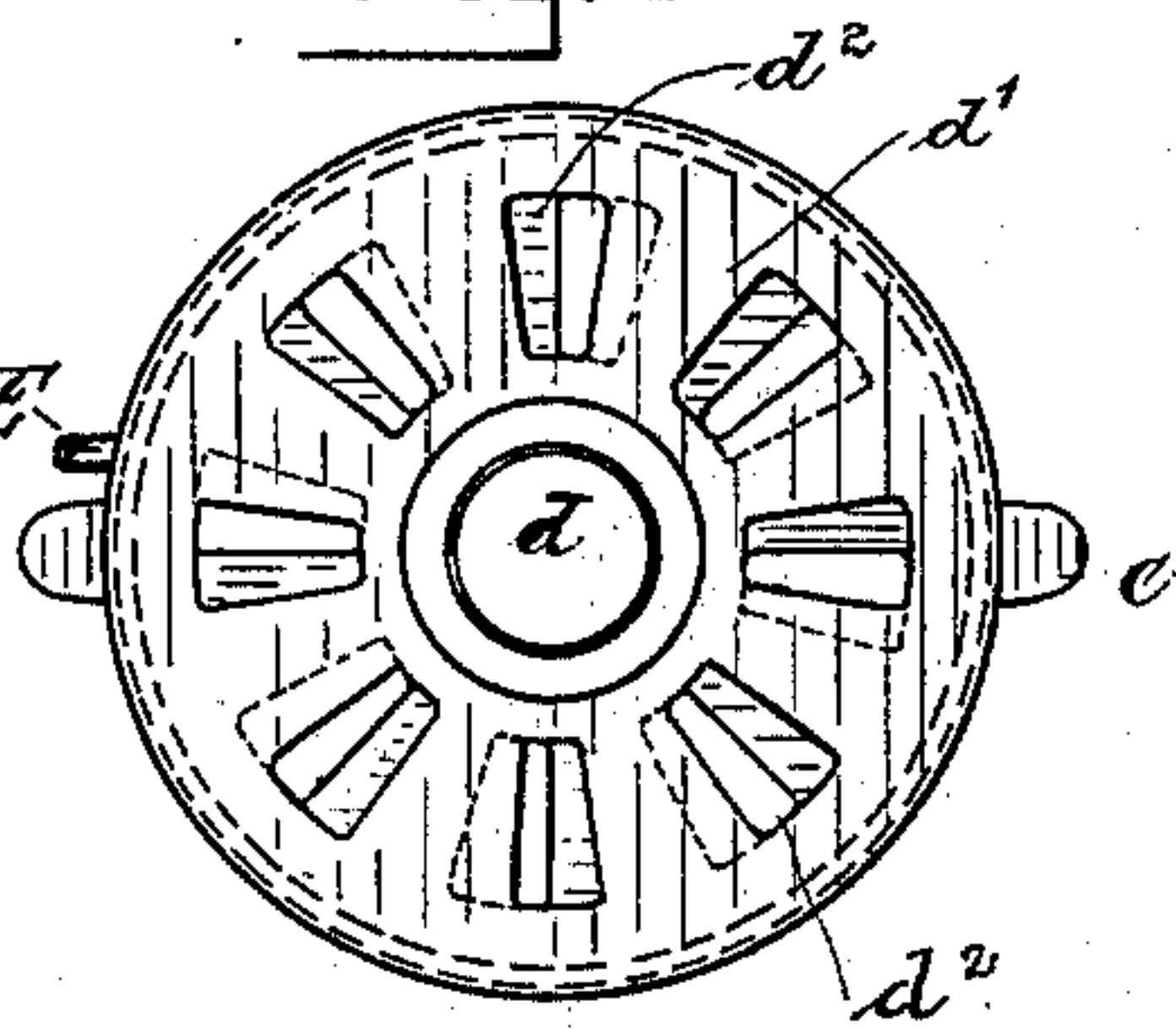


Fig. 6.

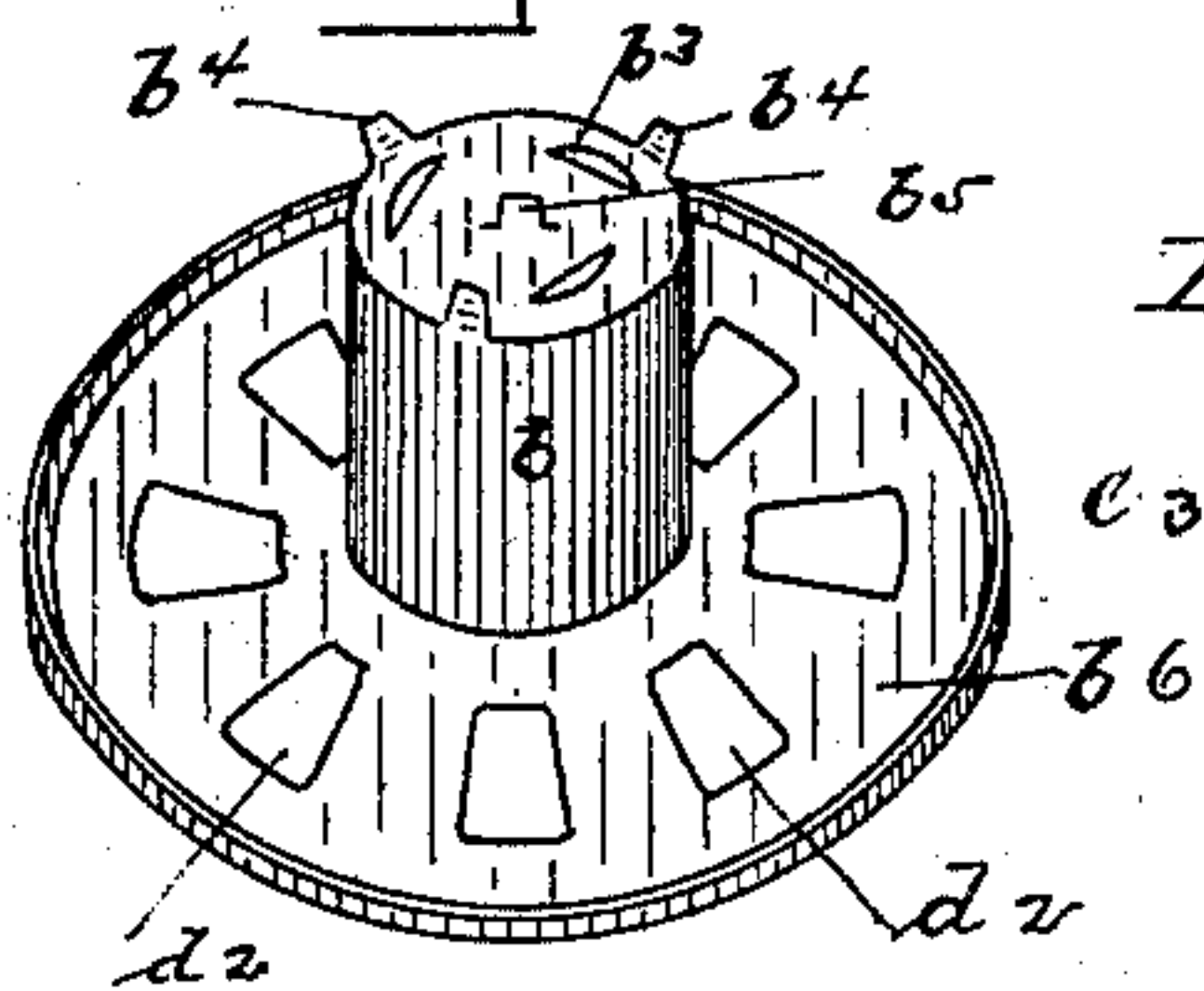
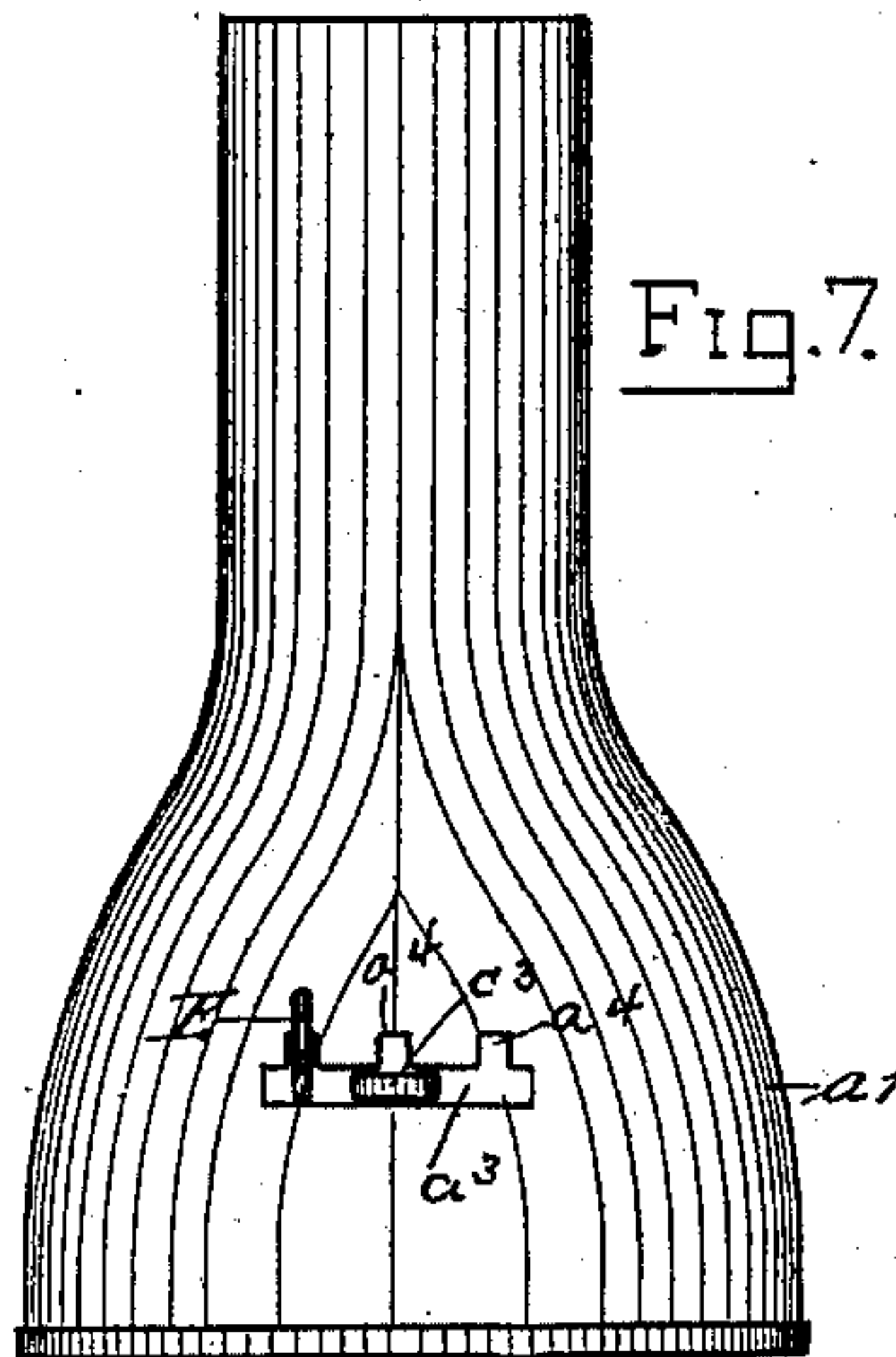


Fig. 7.



WITNESSES:
C. H. Kuehl
L. G. Snow.

INVENTORS:
Max Herskovitz
BY *and Abraham Herskovitz*
Lud K. Benjamin,
ATTORNEY.

UNITED STATES PATENT OFFICE.

MAX HERSKOVITZ AND ABRAHAM HERSKOVITZ, OF CHICAGO, ILLINOIS.

BUNSEN BURNER.

SPECIFICATION forming part of Letters Patent No. 752,773, dated February 23, 1904.

Application filed April 1, 1901. Serial No. 53,983. (No model.)

To all whom it may concern:

Be it known that we, MAX HERSKOVITZ and ABRAHAM HERSKOVITZ, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bunsen Burners; and we 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 appertains to make and use the same.

Our invention relates to improvements in Bunsen burners; and the general object of our improvements is to provide a burner for use with incandescent mantles which will be economical to make, simple to operate, and effective in use.

A further object is to secure a full and uniform or steady supply of air by providing means to produce an unbroken draft from the point of admission at the base to the upper end of the tube and to provide easily-operated air and gas shutters for controlling, respectively, the supply of air and gas to the burner proper.

Another object is to provide a by-pass which may be adjusted to different degrees of gas-pressure.

In burners of this class which are used in connection with incandescent mantles great difficulty has been experienced in securing a steady, uniform, and well-distributed and proportional supply of air for the gas and to provide against the flame being blown out when turned down low by drafts of air entering through the lateral openings in the Bunsen tube of the common type.

An important object of our invention is to avoid this difficulty.

In the accompanying drawings, which form a part of this application, Figure 1 is a perspective view of a burner-tube embodying our invention. Fig. 2 is a vertical section of Fig. 1. Fig. 3 is a perspective view of one form of a thimble forming a part of the burner proper. Fig. 4 is a plan view of the rotatable plate which fits the top of the thimble. Fig. 5 is a bottom plan view of Fig. 1, showing the

air-shutter. Fig. 6 is a perspective view of a modified form of thimble; and Fig. 7 is a plan view of the tube, showing the by-pass feature.

In the drawings, A represents our improved Bunsen tube, which is formed with its upper part cylindrical and contracted and its lower portion *a'* flaring outwardly or bell-shaped, thus giving a large opening for the admission of air at the base of the tube and then converging the air-currents while they are mixing with the gas. The lower edge of the tube is partially closed by a plate D, in which are central opening *d* for the gas-supply pipe and radial openings *d'* for the air. Outside of this plate is rotatably secured an occluding disk *d'*, which is provided with similar radial openings and with portions between the openings adapted to blank or close the openings *d'* in the plate when the disk is rotated, these two plates constituting an air-shutter device of well-known form. Within the bell-shaped portion of the tube is placed the burner proper, B, which is composed of a thimble *b*, preferably made of soft brass and cast with apertures *b'* in its top, with lugs *b'* on its upper edge, a central lug *b'*, and with arms *b'* extending radially from the lower edge at equidistant points. These arms are bored and threaded at their outer ends, as at *b'*, to receive the screws *a'*, which secure the burner in position, said screws first passing through suitable screw-holes in the sides of the tube. In lieu of this construction we may utilize that shown in Fig. 6, in which an annular flange *b'* is formed around the lower portion of the thimble, and in this flange radial openings are left for the passage of the air, said openings adapted to be closed by the rotation of the shutter or disk *d'* in the manner described. On top of the thimble is placed a plate C of flat metal having apertures *c'* therethrough and formed with arms *c'*, by means of which the plate may be rotated on the thimble and checked, respectively. These arms extend through openings *a'* in the sides of the tube at opposite points, and the plate is secured in place on the thimble by bending down over the plate the lugs *b'* and by heading over the cen-

tral lug b^5 , which projects through the central opening c' in the plate. The arm c^3 of the plate c projects through the opening a^3 in the tube only sufficiently to engage a catch E , whereby the rotatory movement of the plate is checked. This catch is preferably formed of a piece of spring-wire bent around the thimble and having its free end bent upwardly and outwardly, so that it projects from the opening a^3 and impinges against the upper side of the opening, in which notches a^4 are cut to receive the end of the catch. This arrangement is important, as it is necessary to prevent an excess of gas escaping from the thimble and because there is great variation in the gas-pressure. Unless there is perfect combustion the mantle will become blackened and its incandescing qualities impaired or destroyed. When the pressure at a burner has been ascertained and the proper supply of gas determined upon, the catch is adjusted in the suitable notch, and thereafter the plate cannot be rotated beyond the point where the arm c^3 will strike against the projecting end of the catch. Normally the openings c^2 in the disk exactly register with those in the thimble, so that there may be an uninterrupted outflow of gas from the burner; but when it is desired to shut off or reduce the flow the plate may be rotated. In order to indicate externally the extent to which the gas is turned on, we provide on the exterior of the tube, above and below the opening a^2 , marks indicating three positions of the plate. We prefer to so arrange the plate relative to the thimble that it cannot entirely close the openings in the latter and to accomplish this make the opening a^2 in the tube of such length that the arms c will strike against the end walls of the opening before the apertures in the thimble are entirely closed. By having the air-shutter contiguous to the thimble we are able to accurately regulate the admission of air required for the outflow of gas from the latter. The dome or bell shape of the tube causes the air to be sucked in by the heat above, and on its passage through the tube an uninterrupted draft is created, which secures an effective admixture of air and gas for combustion in a regular and uniform column calculated to produce the best results as to flame and incandescence in the mantle.

Various modifications may be made in the details of the device; but the essential elements of our invention are the Bunsen tube, having the lower portion flaring and being without air-inlet openings in its sides, the

gas-shutter, and means for checking the rotatory movement of the shutter.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a Bunsen burner, a tube having its lower portion flaring outwardly, a perforated thimble secured within the enlarged portion of the tube, a perforated occluding plate rotatably mounted on said thimble and having extensions projecting through the sides of the tube, and an adjustable spring-catch engaging the extension of the plate and the perforated sides of the tube whereby the rotation of the plate may be limited, substantially as set forth.

2. In a Bunsen burner, a thimble having integrally-formed arms extending radially therefrom and provided in its top with perforations and with upwardly-projecting lugs, in combination with an occluding plate having perforations registering with the perforations in the thimble, said plate being engaged loosely by the lugs on the thimble, whereby it is centered and rotatably mounted on said thimble.

3. In a Bunsen burner, a tube having its lower portion flaring outwardly and provided with one or more openings in its sides and with graduated marks adjacent to said opening or openings, in combination with a burner arranged within said tube and a plate adapted to open and close the openings in said burner, said plate having portion extending through the said openings in the tube and means for catching or locking said plate against rotation at the points of said marks, substantially in the manner and for the purpose set forth.

4. In a Bunsen burner, a tube having its lower portion flaring outwardly and with one or more openings in its sides, said openings having notches therein, in combination with a burner arranged in said tube, a plate rotatably mounted on said burner and adapted to open and close the openings therein, said plate having an extension or extensions projecting through said opening or openings in the side of the tube, and a spring-catch secured to said burner and adapted to engage the notches in the tube, whereby the rotatory movement of the plate is limited, substantially in the manner and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses:

MAX HERSKOVITZ.

ABRAHAM HERSKOVITZ.

Witnesses:

F. BENJAMIN,

L. G. SNOW.